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6 Economic Regulation

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Deregulation and Regulatory Reform during the 1980s

According to political and journalistic rhetoric, the United States relies on a market economy to allocate economic resources. Thus, the forces of supply and demand, largely unfettered by government intervention, are regarded as determining the quantities, qualities, and prices of goods and services that are produced in the domestic economy. The roots of this belief probably lie in two distinctive features of the U.S. economy: (i) the extent of private ownership of capital combined with relatively little public (nationalized) enterprise and (ii) the absence of strong, centralized economic planning. Nonetheless, this common belief is largely a myth.

Through civil law and regulation, federal, state, and local governments have a substantial effect on almost all industries. Civil law limits property rights, defines contractual obligations, and sets quality standards for goods and services through tort law. Regulatory policy takes two general forms. "Economic" regulation controls profits, sets prices, and determines who can participate in a market or use a particular resource. "Social" regulation controls polluting by-products of production, sets health and safety standards for products and workplaces, restricts the content of information provided by sellers through advertising and other means of describing products to consumers, and establishes requirements to protect buyers from fraudulent, discriminatory, or incompetent behavior by sellers. All these policies profoundly affect prices,

costs, product quality, the dynamics of business competition, and the allocation of resources in the economy.

From approximately 1970 through 1990,[1] federal regulatory policy in the United States experienced profound and far-reaching change. The period is defined by the passage of perhaps the two most economically significant regulatory statutes in the nation's history: the Clean Air Acts of 1970 and 1990. The 1970 act was quickly followed by a five-year succession of bills regulating workplace safety and health, water quality, product safety, the price of oil, the environmental effect of all construction projects requiring federal approval or expending federal funds, the safety of consumer products, the management of employee retirement funds, and the operation of futures markets. The cumulative effect of these acts was to expand regulation dramatically—a change in policy that is comparable to, or perhaps even exceeds, the regulatory policies enacted during the mid-1930s under the administration of Franklin Roosevelt but that was accomplished under the putatively conservative administration of Richard Nixon. After a decade of no significant new social regulatory statutes, the Clean Air Act of 1990 again substantially expanded environmental regulation by enacting strict new policies regarding acid rain, auto emissions, and airborne toxics.

As the ink dried on the expansive environmental, health, and safety regulatory statutes of the 1970s, the scope of economic regulation began to recede. Price, profit, and entry controls in transportation, communications, energy, and finance were either eliminated or dramatically relaxed. By the early 1980s, much of the Roosevelt-era system of economic regulation was gone; however, the Nixon-era reforms in social regulation remained largely in place. By the late 1980s, considerable experience with relaxed price, profit, and entry controls had accumulated. The specter of reregulation loomed over some industries.

The rationales, causes, and consequences of "microeconomic" regulatory interventions have always been the subject of considerable political and intellectual controversy. The dramatic policy changes of the period reflect these disputes. This chapter examines the nature, causes, and consequences of changes in economic regulation during the 1980s. (Kip Viscusi's essay in this volume covers environmental, health, and safety regulation.)

We begin with a discussion of the economic and political theories of economic regulation. We then summarize the major changes in economic regulation during this period. Finally, we offer our conclusions about which economic and political variables appear to be responsible for stimulating economic regulatory change during this period. The industries affected by the regulatory reform movement have diverse characteristics, so the fact that changes occurred in so many industries at about the same time is almost certainly more

1. All choices of dates to demarcate an era are somewhat arbitrary.

than mere coincidence. Yet simple explanations for the question, "Why now?" are elusive.

6.1 Economic and Political Theories of Price and Entry Regulation

The task of theories of economic regulation is to explain and predict which markets will be regulated and with what effect. Any such theory must deal with both the economic and the political spheres of human behavior. Presumably, the performance of a market generates the desire to change the behavior of those who participate in it. The actions that change market interventions are taken by political actors: civil service bureaucrats, political appointees (who manage regulatory agencies), Congress and the president (who collaborate on regulatory legislation and budgets), and the courts (which interpret statutes and determine the legality of regulatory agency decisions). Thus, a theory of economic regulation must account for why the events in a market lead to the political act of policy change.

Economics and political science offer several explanations of changes in regulatory policy. Each discipline has a purely normative or "public interest" version, which starts with the proposition that regulatory policy is designed to advance public welfare. Likewise, the two disciplines contain several "positive" theories (i.e., purely predictive and free of normative motivation, although not free of normative implications). We will begin with the normative theories and then describe the positive ones (for a more complete discussion, see Noll [1989]).

6.1.1 Normative Economic Theory

The traditional economic "public interest" rationale for price and entry regulation turns on perceived failures of unregulated markets to yield reasonably competitive behavior and performance in certain circumstances. Although markets can fail if consumers are poorly informed, historically "natural monopoly" or "natural oligopoly" has been the most important rationale for introducing price and entry regulation (Schmalensee 1979). Specifically, when production is characterized by significant economies of scale and sunk costs, market structure, behavior, and performance may depart significantly from the perfectly competitive ideal. Industries with these characteristics will "naturally" evolve toward monopolies or oligopolies, with adverse efficiency and distributional consequences. Dynamically, in the absence of price and entry regulation, industries with these characteristics are said to be characterized by at least one of several problems: excessive entry, costly duplication of facilities, either monopoly exploitation or unstable prices and "destructive competition," excessive investments to deter competitive entry, and a variety of other performance failures.

Several distinguished nineteenth- and early twentieth-century economists argued that, in industries with these characteristics, performance would be im-

proved by having a single firm supply the service and subjecting its prices to government regulation (Sharkey 1982, 12–28). It was argued that entry restrictions would ensure that the efficiencies associated with economies of scale were achieved and that cost-based price regulation would pass on the efficiency gains to consumers.

Since the seminal article by George Stigler (1961), economists have developed a comparably rich literature on the performance of markets in which consumers are poorly informed. Even when such markets are structurally competitive, some firms may be able to sustain monopoly prices, and firms may be inefficiently small. Normally, informational requirements are the recommended solution, but complex products with arcane characteristics may require price regulation to prevent monopoly pricing.

These market failure stories have several flaws as either a normative or a positive theory of regulation. First, once any significant degree of informational imperfection or economies of scale and sunk costs is incorporated in market models, market outcomes will depart from the perfectly competitive ideal. But these models provide no clear way to identify industries where, in the absence of regulation, industry performance will be sufficiently poor to justify price and entry controls. Because most real markets are in some way imperfectly competitive, the market failure approach can provide a rationalization for regulating almost any industry, if one assumes that regulation can in fact ameliorate market imperfections costlessly.

Second, price and entry regulation is also imperfect. Regulators can be imperfectly informed only about the "efficient costs" and the "optimal" prices of services. Price and entry regulation can increase costs, retard productivity growth, and promote cross-subsidization, harming at least some consumers. Furthermore, regulatory procedures aimed at identifying the right costs, setting the right prices, and determining the optimal number of firms create incentives to produce inefficiently and may discourage or distort technological changes that would benefit consumers. As a result, from a normative perspective, decisions regarding the nature and extent of government regulation should balance the costs of imperfect competition against the costs of imperfect regulation.

Third, even when imperfect regulation is less costly than imperfect competition, subsequent changes in supply and demand conditions may lead to a different conclusion. Sensible regulation today does not necessarily mean that regulation and prevailing industry structures should be cemented in place for all time. In most cases, regulatory statutes do not ask regulators to identify only markets that are substantially imperfectly competitive and to regulate them only temporarily until competition can be relied on. Instead, statutes normally presume a permanent state of comprehensive regulation. Significant deregulation, therefore, normally requires a new law if it is to escape judicial reversal.

Finally, market failure rationales do not explain the incidence, persistence, or nature of economic regulation in many industries. One would be hard

pressed to support an efficiency argument for price regulation of trucking, buses, airlines, property/casualty insurance, or natural gas wells. Moreover, regulatory procedures and outcomes typically are not consistent with the notion that the purpose of the regulatory process is to simulate hypothetical competitive market outcomes. Rather than protecting consumers generally from exploitation, government regulation often protects incumbent producers from competition and is used to redistribute income from one group of customers to another (Stigler 1971; Posner 1971).

The failure of normative economic theory to explain regulatory policy has given rise to several theories of the politics of regulation. Some assign a role to economic efficiency effects, but others ignore them entirely. Here we review some of the more influential of these theories.

6.1.2 Ideological Shift

It has become common, especially in the popular press, to refer broadly to the changes in economic regulation as *deregulation,* which is then held to be synonymous with a kind of libertarian ideology, "to get government off the backs of the people." These changes are often attributed to the Reagan administration, the implication being that they were a consequence primarily of an ideological shift in the executive branch of the federal government. In a sense, this is a political "public interest" account. Citizens changed their views about the role of government, adopting a more conservative, free market ideology and in 1980 elected a president to carry out the implied policy change. This view is at best simplistic and more likely simply wrong.

The changes in economic regulation in the recent past include some examples of virtually complete deregulation of prices, entry, and the quality of service (e.g., airlines, trucking, railroads). But other changes have taken the form of a peculiar mixture of regulation and competition (e.g., telecommunications and natural gas production and transportation) or of preliminary steps to encourage competition on the fringes of the market and in vertically or horizontally associated industry (e.g., electric power). In only one case was a regulatory agency eliminated (airlines); in all cases (even airlines) the industry is still regulated in some way, although typically according to different criteria from those used prior to the late 1970s. Resources devoted to economic regulation by the federal government have declined in some areas (primarily transportation) but have been relatively stable or increased in others, as shown in table 6.1.

Many of the changes in economic regulation were launched prior to the Reagan administration. Moreover, the causes of these changes reflect the actions of regulators, legislators, judges, and presidents of both parties and all ideological types in both federal and state government. Thus, these changes simply do not reflect a sudden ideological change in federal executive branch views about the strengths and weaknesses of price and entry regulation generally. Indeed, many of the most significant changes in economic regulation be-

Table 6.1 Staffing of Selected Regulatory Agencies (full-time equivalents)

Agency	1970	1980	1985	1990
Civil Aeronautics Board (CAB) (airlines)	686	753	0	0
Interstate Commerce Commission (ICC) (railroads, trucks)	1,912	1,940	839	661
Federal Communications Commission (FCC) (telecommunication, broadcasting)	1,645	2,156	1,828	1,839
Federal Energy Regulatory Commission (FERC) (natural gas, electric power)	1,164	1,605	1,533	1,500
Federal Deposit Insurance Corporation (FDIC)	2,669	3,691	3,554	3,065
Comptroller of Currency	1,920	3,331	3,250	3,730
Securities and Exchange Commission (SEC)	1,436	2,100	2,046	2,451
Antitrust Division (DOJ)	595	939	649	623

Source: Warren and Chilton (1990).

gan during the Carter administration and were initiated by liberal Democrats appointed by Carter to economic regulatory agencies. Moreover, Carter's principal rival for the presidency within the Democratic party was Senator Edward Kennedy of Massachusetts, whose advocacy of airline deregulation in the mid-1970s is regarded as an important milestone in achieving reforms in economic regulation. Thus, it is not particularly productive to refer to a generic *deregulation* movement or to think of it primarily as a consequence of the election of Ronald Reagan. The causes are far broader than ideology or party and far more pragmatic and complex than a simple desire to reduce the scope of government. An important implication of this fact is that Ronald Reagan's departure from the presidency per se is not likely to cause these reforms to be rescinded.

6.1.3 Ideas and Garbage Cans

A second political explanation having far more impressive scholarly credentials attributes causal influence to the way the intellectual establishment thinks about government policy. Although a political account, the "ideas theory" assigns only a minor role to electoral politics. Elections simply force political officials to take visible actions to solve salient national problems. Unlike in the "ideology theory," the electorate is not assumed to care very much about exactly how the problem is solved or what political philosophy the solution reflects. Instead, it wants actions and, later, visible improvements.

The role of the intellectual elite—academics, scholars at think tanks, and journalists who write for newspaper editorial pages and policy-oriented peri-

odicals—is to provide explanations and solutions for what is wrong. In the case of economic regulation, the specific contribution of intellectual gadflies was scholarly and popular literature that found regulated industries to be inefficient and protective of certain special interests. With a few important exceptions, the source of this new perception about economic regulation was economists, who, from about 1960 until about 1975, produced the first serious empirical and theoretical studies examining what regulation actually does, as opposed to what normative economic theory says it ought to do. Nonetheless, it is not economists who have attributed much importance to this literature in actually causing policy change but political scientists (Derthick and Quirk 1985) and lawyers (Breyer 1982; Levine 1981).

The causal link between the intellectual elite and political action can take two forms: pure ideas or garbage cans. The pure ideas theory is essentially congruent to the normative economic theory of regulation. It argues that somehow political actors were unaware of the extent to which economic regulation had drifted from the norm of protecting consumers against market imperfections. Hence, once political actors came to believe that the economics literature was correct, they responded by changing policy. This version of the ideas story has basically the same infirmity as the normative economic theory, in that it either fails to explain much of regulation at the time regulatory statutes were passed or assumes substantial ignorance on the part of the political officials who enacted these statutes. Moreover, if the real point of regulation is to cure market failures in the interests of consumers, why did it take so long to change statutes that were patently inconsistent with this objective? The theory leaves unexplained the very long gap between the publication of the research findings and the actual reform of policy. Richard Caves's (1962) critical study of airline regulation and the similar study by John Meyer et al. (1959) of truck and rail regulation predated significant deregulation of these industries by more than fifteen years. Indeed, in 1936, in the midst of the era when many economic regulatory statutes were being passed, Pendleton Herring, one of the most distinguished political scientists of his generation, observed that, in the regulatory process, "the milieu is distinctly one of special interest" (1936, 183).

The "garbage can" version of the causal link between ideas and policy change is borrowed from a theory proposed by Michael Cohen, James March, and Johan Olson (1972) as a way to understand all nonmarket organizations. The premise is that leaders of these organizations are unlikely to be very skilled at understanding the causes of substantial changes in their organizational environment because, most of the time, they are supposed to be managing a relatively stable, even inflexible, institution. More specifically, elected officials are unlikely to know much about the effects of economic regulation or, for that matter, about the consequences of any other relatively technical policy—or about the causes of a new social problem. Thus, most of the time elected officials are not thinking seriously about any given policy, and agency officials are appointed to maintain the status quo.

When an external shock occurs, government officials seek a solution but are uncertain about how to identify it. Meanwhile, back at the think tank, intellectuals have been creating a variety of new ideas about all significant policies or social problems. The *garbage can* is a metaphor for the variety of idea products that are available should political actors need them. In the case at hand, the garbage can called *economic policy* was filled with research findings concerning the operation of the domestic economy, but one especially large and impressive piece of garbage was the work on economic regulation. The instigating events were the economic stagflation of the 1970s or economic shocks particular to specific industries. The initial response was traditional remedies (fiscal and monetary stimulation and price controls), but, when these did not work, political leaders dipped into the garbage can. They found that economic regulation was causing inefficiency in basic infrastructural industries, so they asked some producers of the garbage to reform the system. The fact that economic regulation could not possibly have been the cause of stagflation was in a sense beside the point: it was time to take actions that would improve economic efficiency, and the relevant experts were virtually united in predicting that reforming economic regulation would have this effect.

The obvious criticism of the garbage can model is that economists' views about microeconomic policy generally (agriculture, energy, trade, medical care, etc.) usually involve a proposal for greater liberalization, yet only in economic regulation—not even in social regulation—were the economists' prescriptions seriously considered. The theory has a response to this criticism: other ideas were pulled out of the garbage can when crises emerged in the trade deficit, agriculture, energy, and the environment. But this explanation is not very satisfying, even if true, because it implies an irrational unpredictability to policy change. Indeed, the explanation is tautological, for any policy change must have been somebody's idea and so confirms the theory. It also implies that political decision makers are incapable of learning from past experience by generalizing from successes and failures, even if initially the selection of policies was random.

Nonetheless, we cannot deny that, had the research about economic regulation reached more benign conclusions, the history of policy change would have been different. Nor can we escape the fact that many contributors to the scholarly literature on economic regulation went on to serve in regulatory agencies and were in positions to provide the stimulus for regulatory reform.

6.1.4 Interest Group Bias

The predominant positive (nonnormative) theory of regulation is based on the dominance of organized special interests in the political process. The focal point of the theory is factors that cause citizens to become mobilized to try to influence public policy. The theory assumes that politicians are motivated to win reelection and in order to do so adopt policies that either will cause their constituents to vote for them or will generate campaign contributions. One

problem for a politician is that a voter is virtually powerless and so has little incentive to vote or even to know what policies an official advocates (Downs 1957). But groups of citizens are organized for various nonpolitical purposes, notably into firms, trade associations, labor unions, and other groupings according to economic interests (Olson 1965; Moe 1980). Economic groupings can easily and cheaply form the basis for bargaining with politicians for favorable public policies in return for political support. Because a person's income is a very important part of life, and because government has a substantial effect on the distribution of income, economic organizations have an incentive to participate in politics. Moreover, when organized as economic interest groups, citizens are no longer powerless because their votes and contributions can become a significant factor in an election. Of course, economic interest groups are not the only organizations that might be influential; other institutions such as churches, avocational affinity groups (e.g., the Sierra Club or Ducks Unlimited), and state and local government are also potential parties to political bargains with politicians.

The interest group theory predicts that economic regulation is instituted in response to demands among organized interests for changes in market rules that will confer economic benefits on them, at the expense of the groups that are affected by the market rules but that are not sufficiently well organized to have a countervailing influence on policy (Stigler 1971; and Peltzman 1976). Thus, economic regulation should benefit the regulated industry (both profits and employment conditions for unionized labor), the supplier industries, and certain groups of customers who are organized according to their economic interests, at the expense of suppliers (e.g., nonunion labor) and customers (e.g., the prototypical consumer), who are not well organized.

Interest group theory has several predictions about the nature of regulation. First, it predicts cross-subsidies among regulated services and products, generally working to favor organized customers at the expense of unorganized ones. Second, relatively competitive industries offer greater opportunities for the creation and redistribution of rents than do monopolies. In the former case, regulation can retard entry and enforce collusive prices, creating greater profits for incumbent firms. It can also dissipate some of these profits by setting highly favorable prices for organized consumer groups. Monopoly regulation, then, should be rare, arising only when the monopolist is not natural and therefore faces the prospect of competitive entry or when regulation is demanded by organized buyer and/or supplier interests that seek to restrain the power of the monopoly. The latter case differs from the normative economic account, however, because it does not predict that ordinary consumers will benefit from regulation.

According to the theory, the causes of deregulation are factors that make regulation sufficiently less beneficial to some organized interests that, considering the costs of participating in the regulatory and political processes, these interests come to believe that they are better off without regulation (Peltzman

1989). For example, if the demand for regulated services becomes more elastic, there is less monopoly rent to extract and so less net benefit to confer on organized interests. Alternatively, owing to change in technology, supplier or buyer groups may prefer to become vertically integrated rather than to buy regulated services but are prevented from doing so by regulatory entry barriers. Or, owing to changes in income and the pattern of demand, all participants in the regulated market may become organized, leaving no remaining source of benefits to be distributed among the organized interests. Then costly regulation will generate no compensating benefits to organized groups, and they will favor eliminating it. Finally, again owing to changes in technology or demand, an industry that once feared entry may have become a natural monopoly. If so, regulation is no longer necessary to sustain monopoly profits and so will no longer be favored by the incumbent firm. Thus, if economic regulatory reform is largely consistent with interest group theory, some quite explicit facts ought to be observable about who supported and opposed deregulation and who benefited and who lost when liberalization took place.

There are reasons to doubt that interest group theory is a complete explanation for changes in economic policy. Most apparently, a great deal of political participation is not accounted for by the activities of organized interests. Despite the obvious and growing importance of political action committees in campaign finance, which quite likely does reflect organized special interests, the majority of campaign contributions still come from individuals. Likewise, campaign volunteers are primarily highly motivated individuals, not organized groups. In addition, economic special interest is hardly the motivation behind numerous political organizations, ranging from the League of Women Voters to grass-roots organizations within political parties. Thus, at least some citizens seem to care about policy in ways other than economic self-interest and are not dissuaded from active political participation by individual powerlessness. It remains to be seen, however, if any of these influences play a substantial role in economic regulatory reform.

6.1.5 Political Entrepreneurship

The theory of political entrepreneurs focuses on candidates for office, rather than interest groups, as the vehicle for organizing citizens to participate in the political system. If an unorganized group of citizens is harmed by a policy, the politician can provide resources to motivate the group to express its policy choices in the political process. Political candidates, and especially incumbent politicians, command considerable resources for communicating with constituents and, in addition, receive free publicity in the mass media. If politicians can package a message in an attractive and comprehensible way and thereby convince some unorganized voters that a policy is harmful, they may succeed in obtaining additional political support.

Unfortunately, the theory of political entrepreneurship does not predict exactly which unorganized groups will be the focus of a politician's activities.

Indeed, the primary prediction is unpredictability. The theory of majority-rule democracy, beginning with the seminal work of Kenneth Arrow (1951) and culminating in the depressing results of Linda Cohen and Steven Matthews (1980), states that, in general, a series of majority-rule votes can produce literally any technically feasible policy. Whatever existing policy is, another policy can obtain majority-rule support. Indeed, no matter what today's policy is, a sequence of majority-rule votes can produce any other policy. Thus, a political entrepreneur can select from among a very large number of strategies for defeating the status quo. Consequently, the targets of the entrepreneurial skills of a politician are predictable, if at all, only from the personal policy preferences of the politician and the relative costs of organizing different opposing coalitions.

In contrast to the organization of economic interests, political entrepreneurship does not leave unorganized consumers (or nonunion labor) without effective representation. In the case of economic regulation, the political entrepreneur theory is consistent with (if it does not predict) a populist base for the regulatory reform movement.[2] One might observe deregulation being led by self-appointed spokespersons for consumers who suffer the costs of a regulatory policy that has been captured by organized economic interests. Moreover, the political entrepreneurship theory is also consistent with unstable regulatory policy, alternating between protecting organized interests and the pursuit of economic efficiency, since either policy, with the right twist, can defeat the other when the other is the status quo.

A major criticism of this line of theorizing is that it is flatly contradicted by the stability of policy. After all, economic regulation was in place for decades before it was liberalized. The answer to this critique is that, knowing that majority rule is unstable, politicians build in institutional impediments to change in order to make policy unresponsive to the kinds of attacks described above. The idea, called *structure-induced equilibrium,* is that agencies and Congress are organized to give each partner in a winning coalition a veto over future policy changes (Shepsle and Weingast 1981). Thus, a policy can change only if a member of its enacting coalition ceases to be represented in Congress or before an agency that was created to be responsive to its interests or if it changes policy preferences in ways that other coalition members would approve. Thus, organizing a new interest in economic regulatory policy will not produce policy change unless circumstances have changed so that the new organization can avoid some veto points.

In Congress, the veto points are created by committee rights. All legislation is referred to committees, which are responsible for particular policy domains. Usually a bill will not be passed until its relevant committee has approved it; however, this process can be circumvented by referral to another committee or

2. For an interpretation of the rise of political opposition to slavery as an example of political entrepreneurship, see Riker (1982, chaps. 8, 9).

by a discharge petition to force the issue to the entire legislative body. In economic regulation, the relevant committees are often the House and Senate Commerce Committees. One form that destabilizing political entrepreneurship could take is to bypass Commerce or so threaten to bypass it that the committee reports a bill that it does not favor but prefers to what might emerge if it were bypassed. These alternatives are, however, costly. They require that Congress ignore committee specialization, which diminishes the incentive of specialized committees to be expert in a particular area of policy. Similarly, if one committee bypasses another, it can be subject to retaliation. Because members of Congress typically are assigned to committees on the basis of their expressed preferences, bypassing another committee generally means risking a position of greater value in order to influence a policy of lesser value. Consequently, bypassing a committee ought to be rare and ought to occur only when there is a relatively high level of dissatisfaction with a policy. Likewise, no politician would have an incentive to organize a new group to attack a policy unless these conditions were satisfied. Hence, one would expect a "political entrepreneurship" model to explain regulatory reform only if the level of public discontent with regulatory policy was quite high.

6.1.6 Function of the Theories

The principal purpose in summarizing the main theories of regulatory policy is to structure our review of how change took place and what consequences flowed from it. Together these theories tell us where to look for political support for liberalization of economic regulation and alternative predictions about how liberalization should have affected prices, costs, and service quality in regulated sectors. With these ideas in mind, we now turn to a description of the origins and effects of the changes in economic regulation.

6.2 Overview of Economic Regulation and Its Reform

Virtually every sector of the economy that was subject to economic regulation before 1975 has experienced very significant changes in the nature and extent of regulation. These changes have had significant effects on industry structures, price levels and structures, costs, and productivity. The industries in which changes in economic regulation occurred are airlines, trucking, buses, railroads, telecommunications, natural gas production and transmission, cable television, banking and financial services, electric power, and property and liability insurance. These industries vary widely in structure, performance, the nature of regulation, and the distribution of regulatory responsibilities between federal and state authorities. There are also wide variations in the rationales, causes, and consequences of regulatory change across these industries. Table 6.2 provides some general information about the major industries affected by changes in economic regulation. A necessarily brief review of regulatory changes that took place in the airline, trucking, telecommunications, insurance,

Table 6.2 **Deregulation and Regulatory Reform during the 1980s**

Industry	Primary Regulatory Agencies	Regulatory Changes	Source of Regulatory Change
1. Airlines	CAB	Deregulation of prices and entry	*a)* CAB initiatives *b)* Airline Deregulation Act of 1980 *c)* Antitrust enforcement
2. Trucking	ICC, state agencies	Deregulation of prices and entry	*a)* ICC initiatives *b)* Motor Carrier Act of 1980
3. Railroads	ICC	Price flexibility, ease of exit, mergers	*a)* ICC initiatives *b)* 4R Act of 1976 *c)* Staggers Rail Act of 1980 *d)* Economic and competitive pressures
4. Telephones	FCC, stage agencies	Industry restructuring, price flexibility, ease entry, incentives regulation	*a)* Agency initiatives *b)* Federal antitrust case *c)* Competitive pressures
5. Natural gas	FERC, state agencies	Unbundling of gas supplies, deregulation of field prices, contractural revisions	*a)* Natural Gas Policy Act of 1978 *b)* Fuel Use Act of 1978 *c)* Exogenous shocks *d)* FERC Initiatives *e)* State commission initiatives
6. Electric power	FERC, state agencies	Entry into wholesale generation, competition in wholesale power, procurement policies	*a)* Public Utility Regulatory Policy Act of 1978 *b)* Regulatory-induced economic pressures *c)* Competitive pressures *d)* Environmental pressures
7. Property/liability insurance	State agencies	More price regulation	*a)* State legislative/regulatory initiatives
8. Cable television	Municipalities, FCC	Deregulation of prices	*a)* Cable Television Act of 1984 *b)* FCC initiatives
9. Banking	FSLIC, FDIC, Comptroller of the Currency, Federal Reserve	Partial deregulation of investment portfolios, deposits services, and interest rates	*a)* Depository Institutions Deregulation Act of 1980 *b)* Garn–St. Germain Depository Act of 1982 *c)* Financial Institutions Reform, Recovery, and Enforcement Act of 1989

banking, and natural gas industries demonstrates just how diverse are the rationales, causes, and consequences associated with these changes.

6.2.1 Airlines and Trucking

The airline and trucking industries are the classic cases of virtually complete deregulation of prices and entry. (The airline industry is discussed in more detail below.) Until about 1977, airline prices and route structures were heavily regulated by the Civil Aeronautics Board (CAB), and interstate trucking was similarly regulated by the Interstate Commerce Commission (ICC) (Joskow and Rose 1989, 1469–73). Frequently, competing suppliers were certificated to provide service on particular routes, but price competition was largely precluded by price regulation based on industry-wide average costs. Scholarly research on regulation in these industries performed in the 1960s and early 1970s concluded that regulation increased costs and prices, distorted technological change, led to excessive service quality as a consequence of nonprice competition in conjunction with excessive prices, and involved significant cross-subsidization among classes of customers (Joskow and Noll 1981, 4–10; Joskow and Rose 1989, 1469–73, 1480–86). Furthermore, research suggested that these industries did not have pervasive market failures, were or could be structurally competitive, and, absent regulatory constraints, would behave and perform at least as well as many industries that are not subject to price and entry regulation.

The origin and persistence of economic regulation in these industries was widely attributed by students of regulation to serving special interests. Incumbent firms were protected from competition. Organized labor could make use of protective regulation to prevent competition from new nonunionized suppliers and to achieve supracompetitive wages and attractive work rules. Some consumer groups obtained subsidies through their political influence over the regulatory process.

Most economists viewed complete deregulation of prices and entry, along with the application of conventional antitrust sanctions, as desirable from an efficiency perspective (Joskow and Noll 1981, 4–10). Nevertheless, economists also believed that, because of the substantial financial stake of well-organized interests in the status quo and the diffuse nature of the costs imposed on many consumers by deregulation, neither industry was a likely candidate for deregulation (Kahn 1983). Nevertheless, regulators appointed to the CAB and the ICC during the Carter administration moved aggressively to use existing statutory authority to relax price and entry regulation substantially (Bailey, Graham, and Kaplan 1985; Kahn 1979; Keeler 1983). Congress subsequently enacted statutes that clarified the legality of the efforts of the CAB and the ICC to relax or remove price and entry regulation and encouraged these agencies to proceed with deregulation initiatives. The Airline Deregulation Act of 1978 established statutory transition arrangements that eventually led to complete deregulation of prices and entry and the demise of the CAB. The

Motor Carrier Act of 1980 gave the ICC clear statutory authority to relax price and entry restrictions and to encourage competition in trucking, although the ICC retained authority to regulate prices and entry under a public interest standard that is more consistent with promoting competition than protecting incumbent competitors.

The deregulation initiatives in airlines and trucking were not part of a general ideological package that promoted less government regulation and more reliance on unregulated markets. They took place during a period of rapid inflation and instability in world energy markets and were promoted as components of a whip-inflation strategy. Deregulation was opposed by the industries subject to regulation and by organized labor. The initial regulatory initiatives came about through the appointment of CAB and ICC commissioners already oriented toward deregulation and the use of the administrative process to relax price and entry regulation. Administrative deregulation was followed quickly by legislation that not only provided clear statutory authority for more flexible pricing and entry rules but clearly articulated a congressional preference for less regulation and more competition. The major actors at the regulatory agencies in the Carter administration viewed deregulation as being desirable because the *specific* economic characteristics of these markets made effective competition a likely outcome. They believed that price and entry regulation not only was unnecessary but was the cause of demonstrably worse performance than under competition. The fact that both airlines and trucking were largely regulated by federal agencies, with little state involvement in price and entry regulation (more for trucking), also meant that deregulation could proceed as a national initiative without requiring fifty states to implement complementary policies.

Airline and trucking regulation differed considerably in the years before deregulation. The changes in the late 1970s at the ICC were cataclysmic, in that the agency had clung tenaciously to the need for detailed, heavy-handed regulation of trucking until the very end. The Carter appointees truly revolutionized the agency. At the CAB, change was somewhat more evolutionary. In the early 1970s, the agency tried to reform pricing rules within the context of continued economic regulation in a major rule-making proceeding, the Domestic Passenger Fare Inquiry (DPFI). The DPFI tried to bring fares more in line with costs and allowed some off-peak fares to go into effect (Breyer 1982, 211–12). However, between 1970 and 1974, the CAB administered a "route moratorium" under which it refused to hear applications even by existing airlines to serve new routes. It also encouraged airlines to make agreements to limit the number of flights on each route (Breyer 1982, 208–9). Additional price flexibility was introduced during the Ford administration by allowing airlines to engage in a variety of special discounts. In Senate hearings in 1976, the chairman of the CAB testified that the Board unanimously supported substantial reduction in its control over prices and entry. Although real deregulation did not occur until after President Carter was elected, Carter appointees entered an agency that

had already begun some initiatives to liberalize the prevailing rigid system of regulation.

The differences between the ICC and the CAB obviously do not reflect any consistent view toward economic regulation in structurally competitive industries. The CAB experience predates any conceivable emergence of an ideological deregulation fervor. Sentiment for airline deregulation began to crystalize after President Ford asked Congress to establish a National Commission on Regulatory Reform in 1974. It was strengthened by the famous Kennedy hearings, in which the junior senator from Massachusetts presided over a highly critical review of the agency's anticompetitive policies (U.S. Senate 1975; Breyer 1982). But, according to Derthick and Quirk (1985), one reason for the CAB's modest reforms in the early 1970s was an effort to respond to the criticism of the agency in the economics literature. Moreover, as described by George Douglas and James Miller (1974), who participated in the DPFI, economic analysis played a significant role in shaping the resulting pricing reforms. Why the CAB, but not the ICC, apparently was influenced by economics so early in the game remains a mystery.

6.2.2 Telecommunications

While airlines and trucking were regulated primarily by federal agencies, the telephone industry has been subject to pervasive regulation by both federal (the Federal Communications Commission [FCC]) and state agencies. In principal, the division between state and federal responsibilities in telecommunications turns on distinctions between intrastate and interstate utilization of the telecommunications network. This distinction is often rather blurry in practice; hence, the division of policy into state and federal issues for purposes of regulating prices, entry, and the availability of service confronts special problems.

First, the telecommunications network is characterized by joint and common costs. Interstate and intrastate calls use the same switching and transmission equipment that constitute the local exchange network. As a result, the allocation of costs between state and federal jurisdictions is inherently arbitrary and creates a natural opportunity for rent-seeking behavior.

Second, until the 1980s, the telephone industry was dominated by a single vertically and horizontally integrated company (AT&T). As a result, its activities spanned all regulatory jurisdictions, and its size, sophistication, and complexity were enormous compared to the resources of any of its regulators. As a result, AT&T was difficult to regulate by any single agency.

Third, after World War II, significant technological changes took place in switching, transmission, and customer equipment. These changes caused telecommunications technology to converge with microelectronic and computer technologies and hence gave firms in these industries potential competitive opportunities in telecommunications. Moreover, technological change also worked to reduce the importance of scale economies in the industry. This caused outsiders to believe that a somewhat different system design, with a

somewhat different form of management, could provide better or less costly products than were being supplied by AT&T. For the most part, these changes had a greater effect on the parts of the industry in the federal jurisdiction. Until about 1980, the slowest progress took place in the lines connecting customers to the local switch, which accounts for more than 60 percent of the costs of local telephone companies.

Fourth, state and federal regulators encouraged some entry by setting prices to effectuate cross-subsidies. Some competitive entry may have been attracted, not because alternative suppliers could provide service at a lower cost or of a better quality than AT&T, but because regulators set some prices too high.[3] Likewise, by pricing other services too low, regulators may have discouraged entry where it was warranted. The net effect of the pricing structure was that, on balance, federal services subsidized state services.

Fifth, when reform began, it was widely believed that broad, efficiency-enhancing regulatory reform would require more than simple deregulation of prices and entry. The local exchange continues to be a state-regulated monopoly, at least for residential and small business customers. In long distance, the most plausible permanent market structure is a natural oligopoly, but for at least several years it was expected to remain dominated by a single firm, AT&T. Hence, at least for a while, complete economic deregulation of long distance was implausible, although it may be attractive in the 1990s. Competitive behavior is more likely in other segments of the telephone industry, but, because of AT&T's size, a transition period was needed to allow sufficient competitive constraints to develop.

Finally, promoting competition in segments where it can be effective—equipment and long-distance services—was thought by some to be substantially inhibited by the vertically integrated structure of the telephone industry, especially one in which a single supplier provided almost all local exchange service. According to this view, promoting competition required fundamental structural changes in the industry, in part because coordinated state and federal regulatory reform of a resistent, vertically integrated monopoly would be slow and difficult.

Because the structural view prevailed, regulatory reform in telecommunications was affected by both regulatory initiatives and a federal antitrust suit that led to a complete restructuring of the telephone industry in 1984. New entrants and customer groups that benefited from these policies became an important political force for continuing reform within the regulatory process, the courts, and the legislative and executive branches.

Meanwhile, most state regulatory authorities played a small, sometimes

3. In the early days of long-distance competition, specialized common carriers did not pay local telephone companies part of their revenues, as did AT&T. Eventually, the FCC adopted a complicated and quite arbitrary pricing system for local access for all carriers. These prices depended on the form of access enjoyed by a carrier and were lower for AT&T's competitors because their access was worse. Today, all carriers pay the same prices for the same quality of access.

counterproductive role in regulatory reform efforts in this industry. The single most important beneficiaries of cross-subsidy in telecommunications were basic access customers in small towns and rural areas—a service that is regulated by the states (Noll and Smart 1990). Competition threatened these cross-subsidies and so threatened to cause state regulators to have to raise these highly visible prices. Not surprisingly, most state regulators did not rejoice at this prospect and fought liberalization.

The key point about developments in telecommunications policy is that it is difficult to point to any single decision that introduced competition. More than anything else, FCC decisions seem to be driven by technological progress—and by the fact that much of this progress has come from outside the industry, from companies willing and able to go head to head against AT&T in some market. And, more than other agencies, throughout most of its history the FCC has been a relatively reluctant regulator. Unlike in transportation and energy regulation, economists had not undertaken extensive empirical studies of telecommunications regulation.[4] And, unlike airlines and trucking, regulatory reform in telecommunications took place without any legislative action. Indeed, the primary legislative threat has been to reverse both FCC liberalization and the antitrust case. In both 1976 and 1981, AT&T, with some support from executive branch officials who disapproved of events at the FCC and the Department of Justice, almost succeeded in obtaining legislation to establish in law its monopoly status (see Temin and Galombos 1987). Then, in 1986, Congress fell only one vote short in the Senate from reversing the FCC's move toward eliminating cross-subsidies in AT&T's price structure. Although one should not read too much into near misses on legislation, it is apparent that regulatory reform in telecommunications has been on far shakier political ground than was deregulation of airlines and trucking.

6.2.3 Natural Gas

Like telephones, the natural gas industry has been subject to pervasive regulation by both federal and state regulators. And, as with telephones, federal regulators (the Federal Energy Regulatory Commission [FERC] and its predecessor, the Federal Power Commission [FPC]), the courts, and the U.S. Congress have played the dominant role in changing regulatory policy and industry structure. Unlike the telephone industry, natural gas was not extensively integrated either horizontally or vertically.

Natural gas is produced by numerous firms, most of which sell to independent interstate natural gas pipelines. These pipelines sell gas to independent distribution utilities, which have de facto exclusive geographic franchises to resell gas to residential, commercial, and industrial customers other than large industrial and electric utility customers that purchase gas directly from pipe-

4. Nearly all the research focused on measuring the magnitude of scale economies in the industry, and this work produced largely inconclusive results (see Fuss 1983).

lines. Because of this structure, the costs of natural gas production, pipeline transportation, and retail distribution are readily separable.[5]

Federal regulation encompasses (since 1954) the prices that interstate pipelines pay for natural gas in the field and the prices that pipelines charge to local distribution companies for gas and pipeline transportation (since 1938). State regulation covers the prices charged to retail customers by local gas distribution utilities. Federal regulators are responsible for certificating the construction (entry) of new natural gas pipelines and the expansion of existing pipelines, while state regulators are responsible for certificating extensions of local gas distribution systems. Of course, since a large fraction of the costs of a local distribution company is accounted for by the costs of the gas it purchases, federal regulation of field prices and pipeline charges has important implications for the ultimate prices paid by retail customers.

Initially, the Federal Power Commission was also a reluctant regulator, refusing to regulate the field prices of natural gas because the industry was structurally competitive. But, in 1954, the Supreme Court ruled that the Natural Gas Act of 1938 required the agency to regulate the price paid by interstate pipelines for gas in the field, despite the fact that a plain reading of the statute suggested otherwise. After several years of experimentation with cost of service regulation on a producer-by-producer basis, the FPC introduced field price regulation in the early 1960s, setting separate ceiling prices for "old gas" and "new gas" in each of five gas-producing areas on the basis of the average historical cost of discovery, development, and extraction in that area. This system of historical average cost pricing could lead to prices that equated supply and demand only by accident. Within a decade, field price regulation had produced the predictable result: excess demand for gas and prices insensitive to trends in substitute fuel prices and their impact on the demand for natural gas (MacAvoy 1971, 1973; MacAvoy and Pindyck 1973). The problem was vastly exacerbated by the first oil price shock of 1973, causing substantial increases in demand at regulated prices, but no opportunities for gas prices to adjust to clear the market. Shortages and administrative rationing of natural gas became major problems for the industry and its regulators during the 1970s.

After years of bitter debate, Congress finally passed the Natural Gas Policy Act of 1978 (NGPA), surely the most complicated economic regulatory statue yet enacted. The basic idea of the statute was to let the price of gas gradually rise to market clearing levels and to provide a means whereby higher-cost wells could be profitably exploited. The mechanism was an incredibly elaborate classification scheme for gas wells, combined with a separate regulatory pricing procedure for each category. Eventually, as old, cheap wells played out and new, expensive wells replaced them, gas prices would increase, and regulatory price constraints would no longer be binding. Unfortunately, the price adjust-

5. The costs of natural gas production are not readily separable from the costs of producing oil, however.

ment mechanisms contained in the NGPA were based on specific assumptions about the future price of oil, a close substitute for natural gas for many end users. Just as the NGPA was passed, oil prices rose sharply as a consequence of the Iranian revolution (1979–81). At first it appeared that the gas price trajectory contained in the NGPA was too low and that gas shortages would continue until prices for many categories of gas were to be deregulated in 1985. But, after 1981, oil prices began to fall and then collapsed in 1986. The recession of 1981–83, and a restructuring of the economy that adversely affected industries that used large quantities of natural gas, made the situation even worse. A gas shortage quickly became a gas glut.

During the mid- and late 1980s, the combination of historical regulatory practices and changed economic conditions caused the natural gas industry to plunge into economic turmoil. Before the gas glut, pipelines had signed long-term contracts for future gas supplies that anticipated high oil prices and a growing demand for natural gas. They had also signed contracts with local distribution companies to provide bundled gas and transportation services at the average cost of service. When oil prices fell and the demand for gas declined, the supplies of gas that pipelines had contracted for could no longer be sold to end users at prices that recovered the costs of these contracts. As a result, major changes ensued in federal and state economic regulation and in the structure of the industry.

Three significant changes took place in the way gas is sold. Rather than being required to purchase bundled gas and transportation services, pipeline customers could purchase at least some gas directly from field producers and contract with gas pipelines for transportation services only. Thus, many gas pipelines now act as common carriers, charging customers only for pipeline transportation services that continue to be regulated by the FERC, using traditional rate-of-return procedures. Because of the unbundling of gas supplies from transportation services, gas pipelines, gas distribution companies, and large direct service customers increasingly compete directly for field gas, and a large brokering industry has emerged to arrange for gas supplies for local distributors and direct service customers who choose not to rely on pipelines for bundled gas supplies and transportation services.

During the late 1980s, gas prices were significantly below the prices that would have emerged had the old system of bundled sales and long-term contracts been retained. Contract prices and quantities negotiated in the late 1970s and 1980s generally reflected the expectation that oil prices would continue to rise and gas demand to increase. Many of these contracts were breached, voluntarily renegotiated, or renegotiated as a consequence of regulatory pressures during the mid- and late 1980s as oil prices and the demand for natural gas declined. Gas distributors and pipelines sustained large financial losses through the renegotiation of these contracts (on the order of $10 billion). Furthermore, the difference in gas prices appears to have widened between cus-

tomers who can readily turn to substitute fuels and customers who do not have good fuel switching capabilities.

For the last few years, the FERC has actively embraced the unbundling of pipeline transportation from pipeline provision of gas supplies and has promoted competition for field gas by pipelines, distributors, and end users. These policies appear to reflect more a response to the problems caused by changing economic conditions and the historical legacy of price regulation than an exogenous regulatory reform initiative. Unbundled pipeline transportation was initially instituted by the pipelines themselves in an effort to respond to declining gas demand and their contractual obligations to producers. The primary impetus for these changes was the unanticipated reduction in the price of oil after 1981 and the associated effects on gas demand of relatively high prices and quantities for gas that were specific in rigid long-term contracts written after 1978 and before the recession of 1981–83. These changes in energy markets made it impossible to sustain the complex regulatory and contractual status quo.

6.2.4 Property and Liability Insurance

Many economists and other scholars view liberalization in transportation, communications, and energy as a triumph of sound economic analysis over interest groups who used the regulatory process to feather their own nests. It is important to recognize, however, that, just because scholarly research concludes that an industry is structurally competitive and would perform better without costly and inefficient price and entry controls, it does not follow that public policy will quickly move to remove or relax regulation. The property/liability insurance industry is a case in point.

The property/liability industry is structurally competitive (Joskow 1973; Joskow and McLaughlin 1991; Joskow and Rose 1989, 1473–75). Concentration ratios are low, entry is easy, and there is no evidence of excess profits or inefficiency in states that do not regulate insurance rates. To the extent that a market imperfection exists, its cause is consumers who are not fully informed about the financial strength of insurers. Hence, all states set minimum standards for the capitalization of insurance companies and place restrictions on their investments to protect purchasers of insurance (and insurance guarantee funds) from bankruptcy risks. While there may be very good reasons to subject insurance firms to financial regulations, especially given the presence of an insurance guarantee fund in each state, one is hard pressed to find a rationale for subjecting insurance to either maximum or minimum price regulation.

Yet insurance rates, especially personal lines (auto, homeowners), have been heavily regulated by the states since World War II. For many years, both the insurance industry and its regulators relied heavily on collective price setting and actively discouraged competitive pricing (Joskow 1973; Joskow and McLaughlin 1991). Insurance rate making has led to significant cross-

subsidization, typically shifting costs from urban to rural drivers (Rottenberg 1989). The industry and its regulators were particularly hostile to competitive pricing by low-cost direct writers like State Farm and Allstate. During the late 1960s and 1970s, many states relaxed or eliminated prior approval rate regulation and encouraged independent rate making and deviations from the advisory rates filed by rating bureaus (Joskow and McLaughlin 1991). However, complete deregulation of insurance rates (along with the application of the antitrust laws)[6] occurred in only a single state, Illinois. Then, during the 1980s, the movement toward less price regulation ground to a halt, and many states began increasing the scope of price regulation.

Changes in insurance rate regulation have been heavily influenced by changes in the costs of providing insurance. During the period of liberalization, rates were stable or falling, reflecting stable or falling loss costs and/or underwriting costs, and low cost competitors were seeking to expand their businesses by offering lower rates or innovative products (Harrington 1984). During this period, the regulatory debate tended to focus on minimum rather than maximum rate regulation and "excessive" competition, reflecting the aversion of some firms to competition. When insurance rates rose rapidly, as occurred in many lines of insurance during the late 1980s, political pressures for maximum rate regulation were more intense. In one case—California—extensive rate regulation was enacted, not by the legislature, but by citizen initiative. Ironically, swings in insurance rates depend largely on loss costs. These in turn depend heavily on the costs of accidents as determined by prices for repairs and liability rules as determined by the tort system, neither of which is subject to significant control by the insurance industry.

Despite competitive opportunities in property/liability insurance, an administration in Washington supposedly committed to removing unnecessary regulations, and pricing and availability problems, the regulatory reform movement of the 1980s passed the insurance industry by. There was no meaningful national policy regarding insurance, and many states responded to economic shocks by stopping and then reversing a trend toward less rate regulation and cross-subsidization that had begun during the 1970s.

6.2.5 Banks

The first American industry to be regulated was the banking industry, largely because a nation must control banking at least minimally in order to control its money supply and macroeconomic performance. But economic regulation of banks is largely a creature of the Great Depression, when widespread bank failures caused massive losses of personal savings among American citizens and contributed to deepening and lengthening the Depression.

In some ways, bank regulation is similar to the regulation of insurance com-

6. The McCarran-Ferguson Act provides insurance firms with a limited exemption of the antitrust laws to the extent that they are regulated by state law.

panies. Regulators control the investment portfolio of a bank to assure its financial health and to protect depositors against fraud. But, unlike insurance, bank regulation also segmented the market, imposing geographic limits on lending activities and focusing lending by savings and loan institutions on real estate mortgages. The government also insures depositors against financial loss should the bank fail. In the past, regulators controlled the interest rates that banks could pay depositors and the types of deposits that a bank could offer. Finally, regulators specify the accounting practices that are used to measure the financial health of a bank and regularly examine bank records to assure that the bank is sound and in compliance with regulations. Unlike insurance regulation, the federal government is the dominant player in the banking industry.

Certainly, the single biggest scandal during the era of liberalization of economic regulation is the massive increase in bank failures during the 1980s.[7] First, some large commercial banks failed, owing to the abrogation of loans by several foreign countries and massive default on agricultural loans during the farm crisis of the early 1980s. Then came the savings and loan debacle, in which a very large fraction (estimates range around one-third) of the nation's savings and loans either went bankrupt or are "zombies"—walking-dead institutions that are technically bankrupt but have not yet closed down because they still have a positive cash flow.

The essence of the banking problem is that banks of all kinds—commercial, savings and loan, mutual savings associations, credit unions—make a large number of long-term loans but rely heavily on short-term deposits to finance them. An important component of public policy toward banks is to provide a means for banks to shed long-term loans by selling them to others, leaving the bank as a collection agent for the source of long-term funds. Nonetheless, banks still hold a considerable amount of long-term debt and so can be seriously squeezed when interest rates go up significantly. The regulation of interest rates and investment portfolios was intended to ameliorate this problem.

A second important element of banking regulation was the segmentation of the industry. Commercial banks were the source of loans to business and checking account services without interest on the deposits. Savings and loans were primarily in the business of financing real estate activities, especially housing, and obtained funds through savings accounts paying interest rates subject to regulatory ceilings. The major liberalizing reforms of the past decade have been to reduce substantially the distinctions between these institutions and to relax the regulation of interests rates paid on deposits. All banks now offer checking accounts bearing interest, and all have varieties of savings accounts with restrictions on short-term withdrawal but higher interest rates. Likewise, investment portfolios of all institutions can now contain commercial

7. For more details about the turmoil in financial regulation during the 1980s, see the companion essay in this volume by Robert Litan.

paper (even junk bonds) as well as loans to finance all forms of physical capital investments. The last step in deregulation was the Garn–St. Germain Act of 1982, which essentially freed the savings and loan industry from nearly all the restrictions that distinguished it from commercial banks. These reforms made economic sense, for they improved the efficiency of capital markets by eliminating artificial distinctions among sources and uses of funds. Moreover, they should have reduced banking risks by allowing all banks to have more diversified loan portfolios.

The underlying problem with the banking sector is that many of its investment turned bad, with the result that the liabilities of some banks (deposits) exceeded the assets (collectable loans). But the relaxation of regulation exacerbated the problem, for it took place at precisely the same time as the 1980s oil glut, agricultural depression, Latin American loan defaults, and real estate boom and bust. Meanwhile, because of deposit insurance, customers had little incentive to seek out banks with strong portfolios as the place to make deposits. Moreover, banks are very highly leveraged institutions because regulators have established quite low equity requirements. This means that banks have more funds to lend (and hence charge lower rates of interest), but it also means that they are vulnerable to a general rise in loan default rates.

All these factors conspired to make the conditions of many banks, and especially savings and loans, quite precarious. Then another effect kicked in—the "pending bankruptcy effect." An owner of a bank can lose no more than the amount of equity invested, no matter the magnitude of the bank's excess liabilities. Hence, when a bank (or any other corporation) nears bankruptcy, owners have an incentive to take very large risks—to make loans with a high probability of default but at very high interest rates. If the loans prove good, the bank is saved; otherwise, the federal government through deposit insurance simply takes a bigger loss. This is still another reason why bank portfolios had been regulated in the past. In fact, financial soundness reviews of banks were *not* deregulated. Bank audits continued and should have nipped the pending bankruptcy effect in the bud.

To an important degree, the problems in banking were exacerbated by the fact that, in the 1980s, banks were allowed to invest in riskier loans. But, as explained by Romer and Weingast (1990), the magnitude of the debacle was not caused by deregulation. Even with more relaxed rules, bank regulators detected the problem and sought to cure it in 1985 and 1986, when its magnitude was still rather small. But the political leadership intervened to prevent it, pressuring the agency not to close down failing banks before the losses mounted and not to impose more rigid financial management on banks that were in trouble but still viable. And, as Romer and Weingast and many lurid press stories report, the reasons behind these political interventions had very little to do with the ideology of deregulation or the ideas of economic liberals. Instead, these political interventions were constituency service for generous contributors to political campaigns and other important supporters.

As with insurance, one faces a serious challenge in producing a convincing

argument that banking markets are not structurally competitive and that economic regulation of prices (interest rates) and entry (types of services each category of bank can offer) has any hope of improving on the market. But, like insurance, one *can* argue that banks ought to be subject to scrutiny of their financial management, especially if deposits are insured by the government. The problems in banking arose because the attempt to relax price and entry controls, and so improve the efficiency of capital markets, was erroneously accompanied by *less,* not *more,* scrutiny of financial management, primarily because the industry wanted to be left alone and was able to convince political leaders to let it be. The result was a perverse incentive structure for banks and depositors that turned unlucky events in financial markets into a national economic catastrophe.

6.2.6 Implications from Six Industries

Our brief review of six industries subject to economic regulation in the 1970s and subsequent regulatory change should make clear that we will not find a simple explanation for the significant changes in regulatory institutions that occurred between the mid-1970s and the mid-1980s. The potential for a reasonably competitive market structure (airlines, trucking, banking, telephone equipment) appears to be a necessary, but certainly not a sufficient, condition to explain deregulation. The insurance industry has not been deregulated, and the airline, trucking, and banking industries were not more structurally competitive in 1978 than they were in 1960. Changing economic and technological conditions can play an important role in stimulating regulatory change (telecommunications, natural gas), but dramatic economic changes do not appear to be necessary (airlines, trucks), and economic shocks can just as easily stimulate more regulation as less (insurance in the 1980s [Joskow 1973; Joskow and McLaughlin 1991], banks in the 1990s). The performance of a regulated industry may be so poor that some change is necessary to enable the industry to provide service of a reasonable quality, although institutional response to poor performance may take place very slowly (airlines, trucks). Modest regulatory reforms can lead to results and create constituencies that lead to further regulatory changes (telecommunications), some of which are undesirable (banks). Regulatory changes may be affected by the implementation of other public policies, especially antitrust (telecommunications). Political interventions can be helpful (airlines and trucking), disastrous (banks), or inconclusive (telephones). Actions by the executive, legislative, and judicial branches, and by state and federal authorities, can interact with one another in complex ways.

6.3 Domestic Airlines: Deregulation of a Structurally Competitive Industry

The airline industry is the cleanest example of virtually complete deregulation of prices and entry and, along with the trucking industry, the only one where it makes sense to speak simply about *deregulation.* It is also the sector

in which we have the most experience with deregulation and is (too) often used as a model for deregulation and regulatory reform in other industries. From roughly 1938 until 1977, the U.S. domestic airline industry was subject to heavy *economic* regulation by the Civil Aeronautics Board (CAB).[8] Regulation of airline *safety* and the operation of the air traffic control system and commercial airports were, and still are, the responsibility of a separate federal agency, the Federal Aviation Administration (FAA).

The CAB determined which companies were permitted to provide commercial airline service, decided which city-pair routes they were permitted to serve, set ticket prices, and, near the end, controlled many details of service quality. Airlines serving the same route all charged the same fares, and most passengers could take advantage of one of two fares—coach or first class. These fares were determined by a simple formula based on the average cost per passenger mile incurred by all airlines providing domestic air service, only partially taking into account cost differences associated with distance, passenger volume, and other factors affecting route-specific costs.

Beginning in the early 1960s and continuing into the 1970s, numerous economists studied the consequences of CAB regulation of airlines (Caves 1962; Levine 1965; Eads 1972, 1975; Douglas and Miller 1974). In a departure from historical precedent, economists were in virtually complete agreement—Democrats and Republicans—about the consequences of CAB regulation. Specifically, economists generally agreed that CAB regulation was undesirable and unnecessary for three reasons.

First, regulated prices were too high on average, were too inflexible, and did not reflect the relative costs of providing service on different routes and at different times of the day, week, and year. Prices on long-distance and densely traveled routes were set especially high in an attempt to generate subsidies for high-cost service to small cities. An economically rational pricing structure not only would reduce prices generally but would also reallocate passengers to improve the industry's performance.

Second, the costs incurred by domestic airlines were too high, and air service was provided inefficiently. These inefficiencies emerged because inefficient airlines were protected from competition, because CAB route allocations led to a route structure that did not use aircraft efficiently, and because regulatory rules enhanced the bargaining power of unions, leading to excessive wages and inefficient work rules. In addition, because airlines could not compete on

8. In the United States, regulatory responsibilities are shared between the federal government and the various state governments. In general, the provision of *interstate* services is subject to federal regulatory jurisdiction, while the provision of *intrastate* services is subject to state regulatory jurisdiction. Because most U.S. airlines are engaged in interstate commerce, they have been regulated almost exclusively by the federal government. The exceptions were a small number of *intrastate* airlines that provided service within the states of Alaska, California, Florida, and Texas. The pre-deregulation history of CAB regulation can be found in Breyer (1982, chap. 11), Bailey, Graham, and Kaplan (1985, chap. 1), and Keeler (1983).

the basis of price, they competed in service quality, causing the average quality of service to be *too high.* Service quality is measured by the fraction of seats that are filled, the probability of finding an empty seat available on short notice, the provision of various amenities, and the frequency of flights between cities (given the total number of passengers carried). Although passengers may enjoy having an empty seat next to them on which to put a briefcase, regulated fares reflected the cost of providing seats for briefcases. Passengers were forced to pay for seats regardless of whether or not they wanted to provide their briefcases with a comfortable ride.

Third, scholarly studies also concluded that there was no good economic reason to regulate prices, the number of firms allowed to enter the industry, or the number of firms allowed to provide service on specific city-pair routes. Students of the airline industry argued that price and entry restrictions should be removed because unregulated competition would yield a more efficient airline system. Among other things, they argued that airline service is not a natural monopoly, that many routes could support multiple competing airlines, and that the U.S. industry could support several large national carriers. Further, they argued that, although few airlines might compete on any given route, the threat of entry would hold fares down and constrain monopoly pricing.

Despite the consensus among professional economists about the infirmities of airline regulation, deregulation and regulatory reform lacked political support until the early 1970s. Then the CAB initiated some modest rate-making reforms that brought prices more in line with costs and recognized the problems of costly excess capacity resulting from excessive prices and nonprice competition. Although these changes responded to some of the economists' criticisms, they did so in a way that preserved the basic regulatory structure. Moreover, by continuing to prohibit entry and to set minimum prices that were above those that would prevail under competition, the agency continued to protect incumbents and to impose cross-subsidies.

Executive branch support for airline deregulation first emerged during the Ford administration, although it led to little change. The first important source of congressional political support for airline deregulation came from an unexpected source—liberal Democratic Senator Edward Kennedy. Assisted by then-professor and regulatory critic Stephen Breyer, Kennedy poached on the turf of the Senate Commerce Committee by launching a much-publicized hearing on the CAB that was orchestrated to embarrass the agency. The authors of studies of the CAB were dutifully paraded before the Senate Judiciary Committee to report their findings and conclusions. But, although Kennedy continued to support airline deregulation (an action that may well have influenced then-candidate Jimmy Carter), nothing much came of the Kennedy initiative.

Interest in regulatory reform in general, and airline deregulation in particular, gained political momentum during the Carter administration, stimulated in part by concerns about rapid inflation and stagnant productivity growth in the

U.S. economy. Administrative deregulation[9] of the airline industry began to take place during the first year of the Carter administration with the appointment of deregulation-minded commissioners (Alfred Kahn and Elizabeth Bailey) and with some support from Congress, especially from Senator Kennedy and Senator Abraham Ribicoff. Senator Ribicoff chaired the Senate Governmental Affairs Committee, and soon after Kennedy completed his airline hearings Ribicoff launched a massive, critical review of economic regulation, eventually producing a multivolume series of studies and reform proposals (see U.S. Senate 1977–78). Whereas Kennedy and Ribicoff could not force Congress to take the lead, which would have stripped the Commerce Committee of its jurisdiction, they could, in turn, stop Commerce from slowing administrative deregulation. Kennedy's Judiciary Committee and Ribicoff's Governmental Affairs Committee were responsible for administrative procedures and operating methods in regulatory agencies, giving at least one of them a veto over laws changing regulatory procedures should they choose to exercise it. Eventually, facing a fait accompli, Commerce capitulated, and the chair of the subcommittee of Senate Commerce that had authority over airlines, Senator Robert Cannon, actually became an advocate of deregulation. In late 1978, the CAB's administrative deregulation was codified into law along with a sunset provision for the agency with the passage of the Airline Deregulation Act.

The Airline Deregulation Act provided for the gradual removal over a six-year period extending well into the 1980s of virtually all restrictions on entry into the airline industry, all restrictions on which airlines could fly which routes, and all restrictions on pricing. The Reagan administration supported continued deregulation when it took office and appointed CAB commissioners committed to deregulation, with the result that by 1984 the domestic airline industry was freed from virtually all the old economic regulations that it had been subject to for forty years.

What have been the effects of airline deregulation to date?

6.3.1 Price Level

The evidence on the effects of airline deregulation on average air fares is clear: average fares are lower than they would have been if CAB rate making had continued. The vast majority of passengers pay fares that carry substantial discounts from the fares that would have resulted from applying the old CAB pricing formula. Average fares rose in the late 1980s, owing to growing demand for air service, capacity constraints in aircraft, scarce landing slots at the

9. *Administrative deregulation* refers to changes in regulatory policies instituted by the CAB itself without any formal statutory authorization by the U.S. Congress. The 1938 act establishing the CAB did not require restrictive price and entry regulation but gave the CAB broad authority to supervise the development of the commercial airline industry. Regulatory procedures that evolved after 1938 led to virtually complete restrictions on entry and rigid price regulation. The regulators appointed by President Carter simply endeavored to reinterpret the statute to allow for more competition.

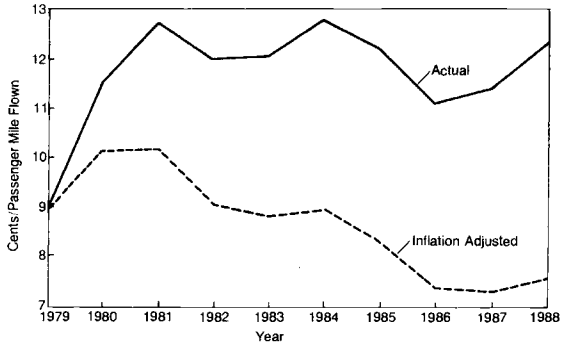

Fig. 6.1 Average domestic passenger fare per mile
Source: U.S. Department of Transportation (1990a, 7).

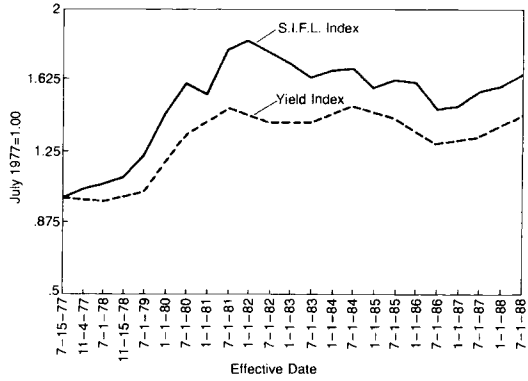

Fig. 6.2 SIFL and yield indices, July 1977 = 1.00
Source: U.S. Department of Transportation (1990c, *Executive Summary*, 8).

busiest airports, rising fuel costs, and the diminution of competition in some markets. Nevertheless, consumers still save billions of dollars each year in lower air fares as a consequence of deregulation (Morrison and Winston 1986, 1989). Figure 6.1 displays the average fare per passenger mile from 1979 through 1988. Inflation-adjusted prices are far below what they were in 1979. Of more interest is a comparison of actual fares with those that would have existed if pre-deregulation pricing policies had continued. Figure 6.2 displays an index of actual prices and an index that roughly measures the prices that would have been charged had the pre-1978 fare formulas (SIFL, or standard industry fare level) continued to be used over the period 1979–88. It is clear that deregulated fares are, on average, lower. Morrison and Winston perform a more sophisticated analysis that is consistent with this comparison.

6.3.2 Price Structure

To say that fares are more complicated now than before deregulation is an understatement. A wide variety of discount fares is now available in addition to standard coach and first class fares. Average fares vary widely from route to route, reflecting differences in travel density, distance, the number of competing airlines, when passengers fly, how far in advance passengers can make a reservation, and whether passengers on particular routes are primarily business or tourist travelers (Bailey, Graham, and Kaplan 1985; Morrison and Winston 1986; Borenstein 1989). Other things being equal (distance, density, etc.), prices are higher on airline routes involving a hub dominated by one or two carriers at one end and on routes with only one or two competing carriers (see fig. 6.3). Competitive entry leads to significantly lower postentry prices (Bailey, Graham, and Kaplan 1985, 61; Morrison and Winston 1986, 1989; Keeler 1983). Fares on shorter low-density routes have risen relative to fares on other routes reflecting cross-subsidies built into regulated rates (see fig. 6.4).

6.3.3 Airline Costs

The average cost of providing airline service has declined substantially in the last decade (holding various input prices constant); airline productivity has risen significantly. Deregulation of routes caused airlines to change their route structures dramatically. Typically, airlines have selected a few cities (hubs) in which to concentrate maintenance and to base flight crews. Except for long-distance flights between many large cities, routes typically consist of flights out of hubs, with aircraft and crew returning at night to their point of origin. The movement to hub and spoke systems led to more efficient utilization of aircraft and crews. Price competition and the threat of hostile takeovers have also encouraged greater efficiency. The average fraction of seats sold has in-

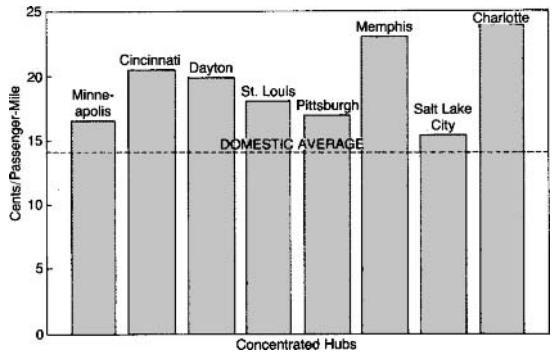

Fig. 6.3 Average fare per mile at concentrated hubs compared to domestic average

Source: U.S. Department of Transportation (1990a, 8).

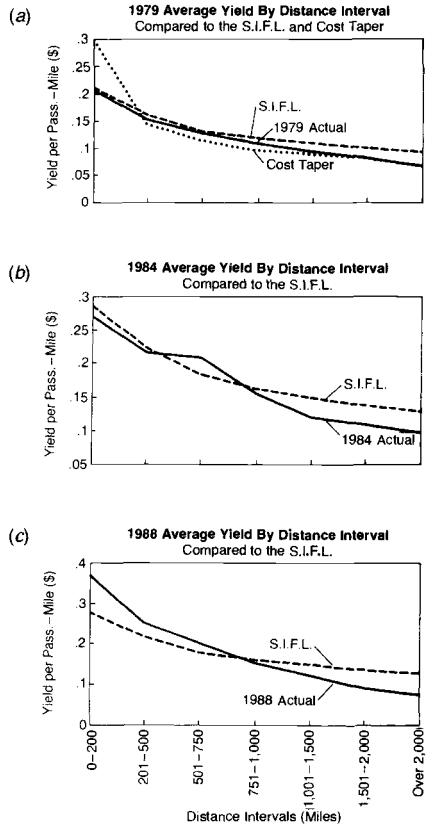

Fig. 6.4 (*a*) 1979 average yield by distance interval compared to the SIFL and cost taper; (*b*) 1984 average yield by distance interval compared to the SIFL (*c*) 1988 average yield by distance interval compared to the SIFL
Source: U.S. Department of Transportation (1990c, 1:12).

creased from less than 55 percent in 1976 to over 62 percent in 1988. Competition, including the emergence of nonunion carriers, has also broken the power of airline labor unions, leading to lower wages and more flexible work rules (Bailey, Graham, and Kaplan 1985, chaps. 4, 5, 8; Morrison and Winston 1986).

6.3.4 Quality of Service

The quality of service has clearly declined in some dimensions and, perhaps less obviously, increased in others. Not all the changes in service quality are the direct consequence of deregulation, however. Let us look first at the ways in which the quality of service has declined.

Table 6.3 Changes in Frequency at Domestic Points, July 1979–July 1988

% Increase	*N*	40 Seats and Under	Over 40 Seats
Points with an increase in frequency:			
Less than 10 percent[a]	38	20	18
10.0–50.0 percent	101	42	59
50.1–100.0 percent	79	36	43
100.1 percent and over	52	35	17
Total	270	133	137
Points with a decrease in frequency:			
Less than 10 percent	27	18	9
10.0–50.0 percent	140	110	30
50.1–99.9 percent	60	53	7
Total	227	181	46
All points	497	314	183

Source: U.S. Department of Transportation (1990b, 1:57).

[a]Includes points with no change in frequency. Classification of points by average seating capacity is based on July 1988. Includes only points served in both parts.

Reduced Service Quality

Since deregulation, air travel has increased, and planes and airports are more crowded. Because of the increase in travel, delays have increased. Some passengers have lost service. Jet service has been cut back or eliminated in many small communities, and a few have lost all airline service. Decreases in flight frequency have been concentrated in small communities (see table 6.3), especially those within an hour's drive of a larger airport. Owing to hubbing, the fraction of passengers traveling on nonstop flights has declined. Average trip time has increased slightly (Morrison and Winston 1986). The average age of the commercial fleet has increased as airlines have extended the life of older aircraft. Initially, the purpose of this strategy was to control costs by deferring purchases of new, more costly aircraft; however, in the late 1980s airlines replaced old planes and expanded their fleets as fast as manufacturers could produce new aircraft. Then in the early 1990s the recession forced airlines to cut costs by keeping old planes in service.

Many of these reductions in the quality of service were anticipated by students of airline regulation (although not advertised heavily). The most severe problems—crowded airports, air traffic control problems, and associated delays—are primarily a consequence of the failure of government to expand airport capacity and air traffic control capabilities in response to the surge in passenger volume and flights since deregulation. The lower fares and new routes created by deregulation substantially increased air travel (see fig. 6.5),

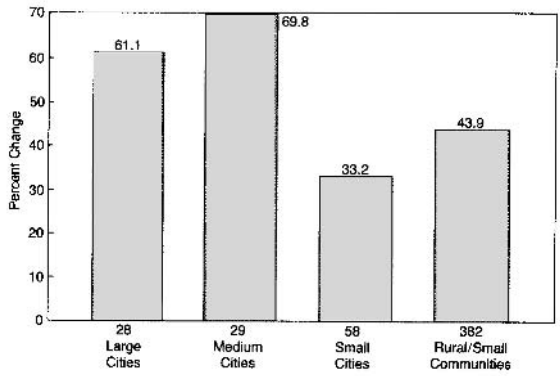

Fig. 6.5 Growth in weekly flights, 1978–89
Source: U.S. Department of Transportation (1990a, 2).

but in 1990 the number of air traffic control personnel was about the same as it was in 1980. President Reagan exacerbated the air congestion problem by firing air traffic controllers in 1981, after a strike, and again in 1987. Likewise, the trust fund from airline ticket taxes has been in surplus during the 1980s, and airport capacity in most cities has remained unchanged for nearly twenty years. Finally, scarce airport capacity is not allocated sensibly. In short, the parts of national air transport policy other than economic regulation have not responded to the increased demands being placed on the system. One *cause* is deregulation, which increased travel, but the *fault* is a failure of other policies.

Increased Service Quality

The number of weekly flights has increased dramatically, and most of the population is served by airports at which flight frequency has increased (see fig. 6.5). The number of markets served by major carriers with hub and spoke systems has increased dramatically. As a result, many travelers can reach most destinations more easily (see table 6.4). While the fraction of passengers traveling on nonstop flights has declined, the fraction of passengers who travel with more convenient on-line connections has increased owing to hubbing (see fig. 6.6).

6.3.5 Industry Structure and Intensity of Competition

Conventional wisdom appears to be that airline deregulation has caused a reduction in competition, but the changes in market structure since 1978 are more complicated than first meets the eye. Three interdependent structural changes have taken place: entry, exit, and consolidation of new and existing airlines; the movement to hub and spoke systems; and the expansion of existing airlines to serve new routes.

Immediately after deregulation began, several new, low-cost airlines entered

Table 6.4 **Number of Points Served, Major Carriers, Month of July 1979, 1984, and 1988**

Carrier	Number of Points Served		
	1979	1984	1988
American	50	75	173
Continental	32	64	137
Delta	69	107	190
Eastern	63	84	142
Northwest	34	42	167
Pan American	25	40	35
Piedmont	48	70	123
Trans World	49	59	94
United	80	112	169
USAir	81	92	131
Total stations (duplicated)	531	745	1,361

Source: U.S. Department of Transportation (1990b, 1:24).

Note: Includes service provided by code-sharing commuters. Data limited to the forty-eight contiguous states.

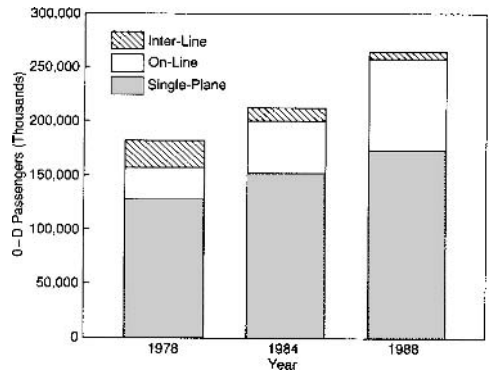

Fig. 6.6 Origin–destination passengers, by routing
Source: U.S. Department of Transportation (1990b, *Executive Summary,* 12).

the industry, and several more small, regional carriers expanded into larger, national airlines. In addition, numerous independent commuter airlines entered or expanded to provide many small communities with more frequent service. One effect of entry and expansion was intense price competition (Bailey, Graham, and Kaplan 1985, chap. 5). After initial success, made possible, in part, by the inefficiency of the existing airlines, virtually all the new "major" entrants and many of the expanded regional carriers either failed financially, were

absorbed by larger airlines because of financial difficulties, or simply merged with other airlines. The number of commuter carriers also declined from its peak in the early 1980s, and most commuter carriers are now affiliated with a major airline.

The dramatic rise and fall in the number of airlines had many causes. Some airlines failed as an inevitable consequence of the dramatic change in the competitive environment created by deregulation. Some failed because of poor management decisions. Some failures were due to the failure of government authorities to expand the air traffic control system and airport capacity to accommodate the huge increase in the number of passengers and flights that was induced by lower fares and competitive entry. Some were due to bad merger policies applied by the Department of Transportation, which permitted several airline mergers that reduced rather than enhanced competition (Borenstein 1990). Still other airlines failed as fuel prices rose and recession reduced the demand for air travel in 1990 and 1991.

The rise and fall in the number of airlines left the industry somewhat more concentrated in the late 1980s than it was before deregulation. In 1978, the top ten airlines accounted for roughly 90 percent of domestic revenue passenger miles (RPM). Owing to the entry and the expansion of smaller airlines, the share of the top five and the top ten airlines declined until about 1985. Mergers and airline failures subsequently led to greater concentration among the five and ten largest airlines than had existed prior to deregulation (see fig. 6.7). There was further consolidation in response to fuel price increases and recession in the early 1990s.

The expansion of hub and spoke operations had two significant effects (Borenstein 1989). First, at many large and medium hubs, the market shares of the dominant carriers increased significantly (see table 6.5). Second, all major airlines increased the number of hubs at which they provided service (see table

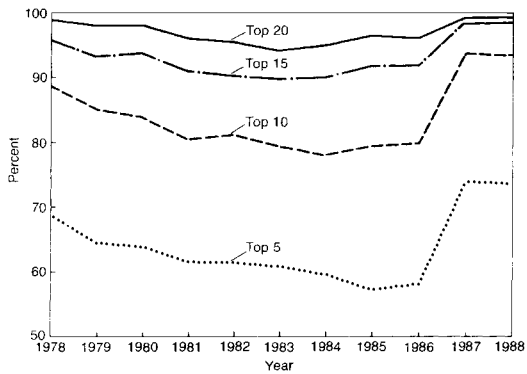

Fig. 6.7 Percentage of domestic RPMs by carrier rank, calendar year 1978–88
Source: U.S. Department of Transportation (1990b, 1:22).

Table 6.5 **Point Concentration, Cumulative Percentage Distribution of Total Enplacements[a] (starting with *most* concentrated points)**

Hub Size and Year	90% or More	80% or More	70% or More	60% or More	50% or More	40% or More	30% or More
Large hubs:							
1988	2.1	10.7	13.3	13.3	33.9	54.3	67.5
1984	...	...	5.7	5.7	24.3	50.1	55.1
1979	...	...	.7	.7	13.1	26.6	38.9
Medium hubs:							
1988	...	...	8.0	17.5	28.5	43.3	63.8
1984	...	...	...	5.1	11.8	26.7	50.7
1979	...	...	.8	2.8	14.5	42.7	77.6
Small hubs:							
1988	...	.8	1.4	7.5	22.0	48.2	80.3
1984	.9	3.0	8.6	16.2	36.4	66.6	88.2
1979	10.2	10.2	.7	30.2	53.0	81.6	96.3
Nonhubs:							
1988	32.1	38.7	52.9	64.8	82.9	92.2	100.0
1984	40.6	51.9	63.2	67.3	77.7	91.1	100.0
1979	42.4	49.4	57.6	67.7	91.5	97.3	99.3
Total:							
1988	2.3	8.9	12.5	14.8	33.3	52.9	68.5
1984	1.1	1.5	6.5	7.9	24.6	48.7	57.9
1979	2.8	3.1	5.0	6.6	20.2	36.8	52.3

Source: U.S. Department of Transportation (1990b, 1:47).

[a]Although distributed on the basis of dominant carrier share, these data reflect total enplacements for all carriers.

Table 6.6 **Number of Large, Medium, and Small Hubs Served, Major Carriers, Month of July 1979, 1984, and 1988**

	Large Hubs			Medium Hubs			Small Hubs		
Carrier	1979	1984	1988	1979	1984	1988	1979	1984	1988
American	21	26	27	22	28	31	7	19	44
Continental	14	21	25	11	11	28	4	8	25
Delta	23	27	27	17	21	28	17	30	43
Eastern	21	26	26	18	26	24	20	21	32
Northwest	18	22	26	4	8	25	4	5	32
Pan American	8	23	20	0	14	14	0	2	2
Piedmont	13	18	24	5	10	17	9	21	28
Trans World	22	25	27	15	25	26	9	9	17
United	23	27	27	17	31	31	22	37	45
USAir	15	23	26	15	17	27	12	17	25
Total stations	178	238	255	124	191	251	104	169	293

Source: Official Airline Guide (July 1979, July 1984, and July 1988).

Note: Includes services provided by code-sharing commuters. Data are limited to the forty-eight contiguous states.

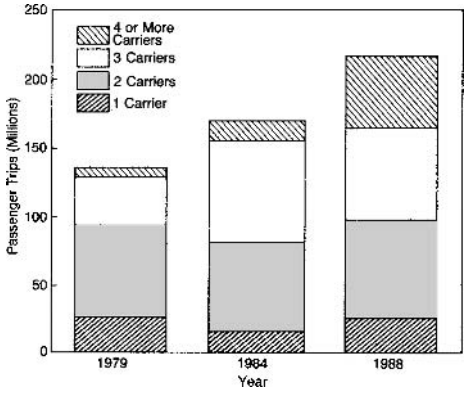

Fig. 6.8 Passenger trips by competitive status
Source: U.S. Department of Transportation (1990a, 4).

6.6). Thus, the large airlines were increasing their market shares at individual hubs, and they were also expanding the number of hubs to which they provided at least some service.

The cumulative effect of these changes is an increase in the number of competing airlines serving the average route. Whereas fewer domestic airlines serve the nation, more serve any given route owing to the growth in hubs and routes by the major carriers. In 1988, a much larger fraction of travelers flew on routes with three or more competing carriers than was the case in 1979 (see fig. 6.8).

6.3.6 Airline Safety

The most significant concern about airline deregulation has been that it would lead to a significant deterioration in airline safety. The standard argument goes something like the following. Intense competition will force airlines to cut costs in order to compete effectively and to provide satisfactory earnings to stockholders. In the process of cutting costs, airlines will cut maintenance expenditures excessively or unwisely defer the replacement of older aircraft. Especially during economic downturns, when pressures on earnings are most severe, maintenance and investment in safety may suffer as airlines try to maintain earnings. The most detailed empirical evidence regarding the validity of this theory, produced by Nancy Rose, is inconclusive. Rose (1990) finds no relation between fatalities and financial performance, but she does find a small, weak effect on nonfatal accident rates.

The concerns about the effects of *economic* deregulation on airline safety are worthy of careful consideration, but several observations about the relation between these concerns and actual experience are in order. First, although many argue that the margin of airline safety has declined, by all objective measures safety has not declined since deregulation (Morrison and Winston 1986,

1989). Second, airline safety regulation was never the responsibility of the CAB and has not been deregulated. The Federal Aviation Administration regulates safety. Deregulation has made the FAA's job more demanding, but the FAA has not grown in proportion to the number of flights and aircraft in service. If safety is inadequate since deregulation, the policy error is the failure to provide the FAA with adequate resources to do its job. Third, above all, airline safety is good business. Passengers are sensitive to airline fatalities and will avoid an airline for several months after a fatal crash (Borenstein and Zimmerman 1988).

6.3.7 Overall Assessment

Students of the airline industry broadly agree that deregulation has been a success from an efficiency perspective. But not all interest groups have benefited from deregulation. Smaller communities have a different type of service, and fares have increased on the shortest and least dense routes. The competitive pressures since deregulation have led to lower wages and less attractive work rules for airline employees. Many airlines have lost significant amounts of money, and several have gone bankrupt. Deregulation has given some airlines market power in some routes.

Public policy toward the U.S. afrline industry in the near future is likely to emphasize three things. First is to remove barriers to competition created by dominant carriers at certain hub airports. The competitive effects of future mergers will be examined more carefully. Efforts will be made to free entry at hub airports that are dominated by a single airline. The second policy concern is to increase airport capacity and to use capacity more efficiently. Because the lead time for new airports is long and local opposition to expansion often intense, increasing the efficiency with which existing capacity is utilized is a very high priority. The third policy emphasis is to intensify safety regulation and to improve the air traffic control system.

6.4 Railroads: Regulatory Reform for a Sick "Natural Monopoly"

The causes and consequences of regulatory reform in the railroad industry cannot be understood without an appreciation of the history of railroad regulation and its effects. The Interstate Commerce Commission (ICC) was the first "modern" independent federal economic regulatory agency. The Act to Regulate Commerce of 1887 created the ICC as an independent federal regulatory agency to supervise the pricing behavior of the railroads for freight shipped in interstate commerce. The initial act gave the ICC relatively broad but vague authority to enforce a variety of common carrier obligations that were already covered, but difficult to enforce, by common law (Keeler 1983, 22–23). The primary focus of the act was to give the ICC the authority to prohibit railroads from charging rates that were unduly "discriminatory." The railroads were in principle prohibited from charging a higher price per ton for transporting any

given commodity on individual "short-haul" segments of a specific "long-haul" route. Charging different prices per ton mile for different *commodities* was not prohibited. As a result, to maximize profits, the railroads used "value of service" or "value of commodity" rate structures that involved relatively high prices for (then) high-valued commodities and relatively low prices for (then) low-valued commodities. Commodity price discrimination has been the norm throughout the hundred-year history of federal regulation of freight transportation.

As interpreted by the courts, the 1887 act did not specifically give the ICC authority to set minimum or maximum rates based on cost of service principles, require regulatory approval for rate changes, or provide for penalties for charging prices that the ICC found to be discriminatory. Nor did the ICC have any authority over entry or exit. Entry and exit were regulated by the states through railroad charters or via common law obligations placed on common carriers (Keeler 1983, 19–24). The ICC could only reject rates and request that railroads file new ones if it determined that existing rates were unjust, unreasonable, or discriminatory.

The rate-making authority of the ICC was expanded significantly by a series of amendments to the Act to Regulate Commerce passed between 1903 and 1910. These amendments gave the ICC the authority to set maximum rates and to suspend rate changes pending an investigation of their reasonableness, provided penalties for discriminatory pricing, and plugged loopholes in the provisions barring short-haul versus long-haul rate discrimination. These same amendments also extended the jurisdiction of the ICC to interstate telecommunications, which was governed by the same regulatory system as railroads until the FCC was created in 1934.

ICC regulatory decisions preceding World War I and during the initial years of the war, a period of rapid inflation, placed burdensome financial constraints on many railroads. Several railroads went bankrupt or were forced to reorganize between 1906 and the entry of the United States into the war in Europe, and the railroads were accused of making inadequate investments in right of way and rolling stock to provide reliable service to shippers.[10] Soon after the United States entered the war, the railroad system was taken over by the federal government, and significant rate increases were put into effect. In 1920, the railroad industry was returned to private management in conjunction with the passage of the Transportation Act of 1920. The 1920 act gave the ICC pervasive regulatory authority to set minimum and maximum rates and rate structures, to certify railroads to provide transportation services for specific commodities on specific routes, to determine whether railroads could cease

10. The poor financial performance of the railroads during the Progressive Era has largely been ignored by students of the political economy of railroad regulation. This is especially true of revisionists who seek to argue that the legislation passed by Congress between 1903 and 1910 and ICC actions implementing the associated statutory authority were designed to benefit the railroads (see Kolko 1965).

providing service on specific routes (abandonment), and to encourage rationalization of the railroad industry through mergers. The 1920 act preempted state authority over entry, exit, and reorganization of railroads. The ICC regulatory umbrella was extended to the trucking industry in 1935 and to certain types of barge transportation in 1940. These acts had the effect of almost entirely suppressing price competition among railroads and between railroads and competing modes.

A great deal has been written about the economic motivation for federal regulation of the railroads. One view is that railroad regulation is motivated by the need to constrain monopoly power. Railroad monopolies supposedly arose because of the economies of scale and sunk costs associated with railroad rights of way, terminals, and networks, combined with the limited competitive alternatives that many shippers faced in the late 1800s and early 1900s. Others argue that regulation was introduced to protect the railroads from competition. Here the argument is that price regulation was first sought to limit cheating on collusive pricing agreements by railroad cartels. According to this view, regulation would be used to place a floor rather than a ceiling on prices. The producer protection motivation is associated with the subsequent extension of ICC regulation to trucking in 1935 and to certain barge transportation in 1940. Still another view associates changes in railroad regulation with more complex interest group politics, finding winners and losers among both railroads and shippers (Gilligan, Marshall, and Weingast 1989).

Whatever one's views about the origins of regulation, by the 1950s regulatory constraints on rates, combined with growing competition from alternative transport modes, began to place severe financial burdens on the railroads. The first severe financial problem emerged in passenger service. It then spread to freight transportation, as modern trucks traveling on an expanding interstate highway system siphoned off more and more of the railroads' highest-valued freight. The railroads were propped up with loans and rate adjustments and eventually were allowed to abandon passenger service entirely. By the early 1970s, many Eastern and some Midwestern railroads were bankrupt, and others faced deteriorating financial performance. Maintenance and investments in tracks, rights of way, and rolling stock were inadequate, and the quality of railroad freight transportation was deteriorating rapidly.

In the mid-1950s, the railroads began to recognize that the existing regulatory structure was increasingly disadvantageous to them and increasingly advantageous to their competitors (Keeler 1983, 29). They sought more pricing freedom from the ICC and Congress to adjust rates to reflect changing cost and competitive conditions. The railroads' efforts met with very limited success. Efforts to raise rates on commodities where railroads had a competitive advantage over trucks and barges (coal and other bulk commodities and long-haul traffic) were resisted by shippers. Efforts to abandon service where railroads could not compete economically with trucks were resisted by those affected. Efforts to reduce railroad rates for services where railroads could

compete more effectively with trucks and barges (manufactured commodities, shorter hauls) were opposed by competing truckers. The railroads also had agreed to union wage and work rules that were excessively costly and blocked improvements in efficiency. Basically, the railroads found themselves stuck with price structures, route structures, and labor relations that reflected the economic conditions of the 1920s and 1930s (Hilton 1969). Because of regulatory (and court) restrictions on the ability of the railroads to respond to changing economic conditions, reflecting opposition from competitors and customers who benefited from the status quo, the railroad industry was rapidly self-destructing by the 1970s.

The problems faced by the railroad industry were widely recognized by the 1960s (Friedlaender 1969) and grew progressively worse during the 1970s. Yet regulators and legislators did relatively little to ameliorate them until well into the Carter administration. Many students of the railroads and their regulation recognized that a financially viable and efficient railroad industry required rate adjustments, route rationalization, and industry reorganization (mergers). Some argued that competition among railroads and between railroads and other modes would provide adequate competitive constraints on prices for most routes and commodities so that regulation of railroad rates could be limited to situations where shippers did not have good competitive alternatives (captive shippers).

In 1976, Congress passed the Railroad Revitalization and Regulatory Reform Act (4R Act), which gave the ICC greater freedom to permit necessary mergers, rate flexibility, and the abandonment of unprofitable routes. But the ICC, responding to competitor and shipper opposition, interpreted the 4R Act narrowly, and it led to little change. During the Carter administration, the new ICC commissioners who favored price and entry competition for trucking also adopted a more expansive interpretation of the 4R Act. They allowed increased price flexibility and expedited route abandonment and merger applications.

In 1980, Congress passed the Staggers Rail Act, which gave the ICC expanded authority to give the railroads considerably more pricing flexibility and to allow abandonments of uneconomic routes. As with similar legislation enacted for the airline and trucking industries, the Staggers Act expressed a clear congressional intent to change the underlying rationale for railroad regulatory policy. Rather than working under the assumption that price competition needed to be suppressed, the new legislation adopted the view that railroads should be given substantial freedom to set prices and to enter or exit markets and that price regulation should be limited to situations where the railroads had monopoly power. It also recognized that, because many shippers had competitive alternatives, stringent enforcement of historical railroad service obligations was no longer necessary. Proponents of railroad deregulation no doubt benefited here from contemporaneous changes affecting airlines and trucking.

The Staggers Act did not technically deregulate the railroads. Opponents of deregulation, especially shippers and consumers of coal, were successful in

getting regulatory protections written into the 1980 statute. Nevertheless, the Reagan-era ICC used its new statutory authority to give the railroads almost complete freedom to set rates and to abandon routes. The consequences of these reforms have not been studied nearly as intensively as has deregulation of the airlines. Nevertheless, regulatory reform appears to have had dramatic effects on the railroad industry (Rose 1988; Moore 1986, 1988; Barnekov 1987; Keeler 1983). Railroads have cut costs, reduced track mileage, expanded combined rail/truck and rail/barge services, renegotiated union agreements, restructured rates, and increasingly relied on confidential contracts with shippers rather than filed tariffs. There has also been significant consolidation of the industry through end-to-end and parallel line mergers, although the ICC drew the line on parallel mergers when it rejected the proposed merger of the Sante Fe and the Southern Pacific railroads. Conrail, formed by the federal government out of pieces of the bankrupt Eastern railroads, was returned to the private sector.

Perhaps the most controversial issue associated with the debate about railroad pricing flexibility was its effects on average rates. Opponents of deregulation argued that railroads had monopoly power and that rates would rise after deregulation; however, average real and nominal rail freight transport rates have fallen since 1980 (see fig. 6.9). While the rates for some commodities over some routes have risen, real rail freight rates have declined at least slightly for every commodity group since 1980 (using the GNP deflator). The feared dramatic increases in coal transportation rates have been limited to situations where shippers are served by a single railroad and have also been constrained by the depressed state of the coal market since the mid-1980s (Joskow 1990). Despite the decline in rail rates, railroad profitability has increased (see fig. 6.10). The railroad industry has been able both to reduce rates and to increase profitability by cutting costs, abandoning unprofitable routes, consolidating

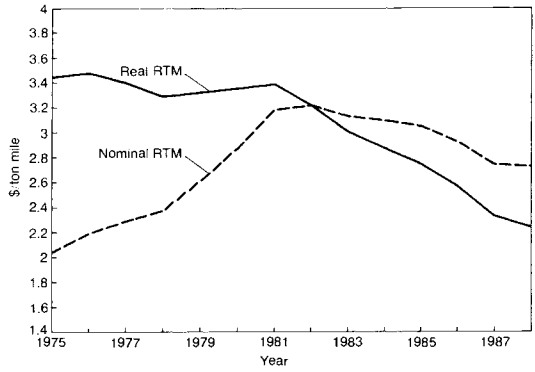

Fig. 6.9 Railroad revenue per ton mile (RTM)
Source: Association of American Railroads (1989, 30).

Fig. 6.10 Net return on investment, class I railroads
Source: Association of American Railroads (1989, 18).

operations, and increasing productivity. Railroad employment has declined dramatically since 1980 (see fig. 6.11), and worker productivity (as measured by revenue ton miles per employee) has increased (see fig. 6.12). Although the careful study of the effects of deregulation on truck drivers' wages done by Nancy Rose (1987) has not been performed for railroad workers, real wages appear to have stabilized since the early 1980s (see fig. 6.13). Overall, railroad deregulation in the 1980s achieved most of what proponents of deregulation had promised. We began the 1990s with a healthy railroad industry that looks very different from the one that existed in 1980.

6.5 Telecommunications: Restructuring and Regulatory Reform to Encourage Competition

Until the early 1970s, the American Telephone and Telegraph Company (AT&T) had a monopoly over almost all segments of the U.S. telecommunications industry. Through full or partial stock ownership, AT&T controlled roughly two dozen Bell operating companies (BOCs—New York Telephone, New England Telephone, Pacific Telephone, etc.), which provided local service to approximately 85 percent of Americans and intrastate long-distance telephone services to virtually all residential and business customers in the United States. These local operating companies were (and are) subject to price regulation by state regulatory agencies.[11] AT&T Long Lines had a de facto monopoly over commercial interstate long-distance service. Its rates and services were (and are) regulated by the Federal Communications Commission

11. Whereas regulation of the airline and railroad industries involved primarily federal regulatory agencies, the evolution of public policy in telecommunications involves an important role for both state and federal regulators.

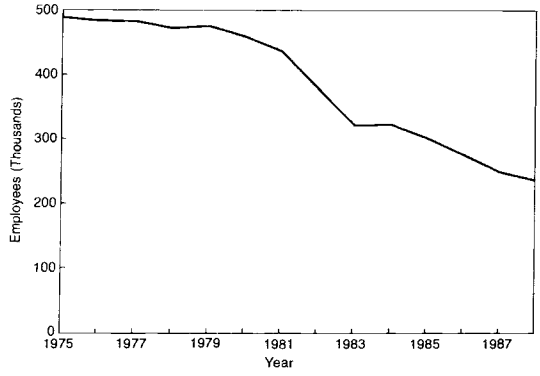

Fig. 6.11 Railroad employees
Source: Association of American Railroads (1989, 56).

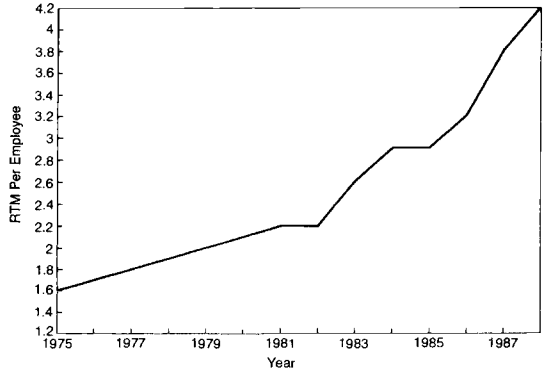

Fig 6.12 RTM per employee
Source: Association of American Railroads (1989, 41).

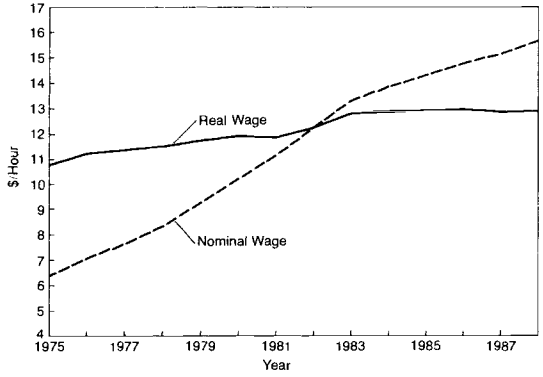

Fig. 6.13 Railroad employee wages
Source: Association of American Railroads (1989, 56).

(FCC), which also has jurisdiction over the radio spectrum, including broadcast television, microwave systems, and radio telephony.

Western Electric, a wholly owned, unregulated subsidiary of AT&T, produced virtually all the telephone transmission and switching equipment used by AT&T affiliates and the customer premises equipment (i.e., telephones) offered to the BOCs' customers. Because AT&T was a virtual monopoly supplier of telephone service, Western Electric effectively had a virtual monopoly over the supply of telephone transmission and switching equipment. Because AT&T generally required customers to use customer premises equipment (CPE) provided by AT&T and bundled the sale of telephone service and CPE together, Western Electric had a virtually complete monopoly on customer premises equipment as well.

The FCC was never as protective of AT&T as the CAB had been of airlines or the ICC had been of trucking. During the 1960s and 1970s, the FCC began to open two key components of the telecommunications industry to competition. In particular, it first grudgingly allowed, and eventually encouraged, competitors to provide terminal equipment (e.g., telephones and switchboards) to AT&T consumers. It also allowed competing long-distance service companies like MCI and Sprint to enter the market. The political and economic pressures that led to these changes in regulatory policies are complex. We will focus on technological changes that played an important role in stimulating competitive pressures and regulatory reform.

6.5.1 Structural Issues

As with railroads, an understanding of contemporary issues in telecommunications policy requires an understanding of the history of the industry and its regulation. The proper scope of competition has been a continuing source of controversy throughout the twentieth century. AT&T became a ubiquitous telecommunications monopoly because it used its control over the only viable long-distance technology to force independent local telephone companies to merge with it. At the turn of the century, local telephone companies competed directly for customers. The controversy of the day was how best to deal with the long-distance monopoly: by creating a matching local service monopoly (the solution proposed by AT&T) or by requiring mandatory interconnection of AT&T's long-distance system to all local telephone companies (the solution advanced by independent telephone companies).

AT&T achieved its monopoly but was also subject to economic regulation. In 1910, regulation of interstate telephone service was given to the ICC. But the structure of AT&T continued to be controversial into the 1930s. During the debate over the Communications Act of 1934, which established the FCC, the ownership of Western Electric by AT&T became a major issue. Some drafts of the act contained strong language favoring competition and even instructed the agency to restructure the industry; however, the act as passed simply listed competition as a consideration and ordered the FCC to study the issue and report back later.

By the time the FCC finished its study, World War II had begun, and Congress and the president were otherwise occupied. But, as soon as the war ended, the controversy reemerged. Developments in microwave technology during the war created new opportunities for business users to construct their own private intracorporate telecommunications systems rather than relying on AT&T and its affiliates. Hence, both potential competitors to AT&T's monopoly and large businesses petitioned the FCC to allow them to use this new technology. After a decade of investigation and debate, the FCC issued the Above 890 decision, allowing the construction of private microwave systems to enable large firms to bypass AT&T for their internal telecommunications requirements.

Meanwhile, AT&T's ownership of Western Electric continued to be an issue. During the war, the computer industry had been born, and electronics had grown substantially. Firms in these industries saw a lucrative prospect in selling equipment to telephone companies but could not owing to their vertical integration into manufacturing. In 1949, the Truman administration filed an antitrust suit against AT&T that sought divestiture of Western Electric, which the Eisenhower administration quickly settled at virtually no cost to AT&T.

The Above 890 decision led naturally to a desire by owners and builders of private microwave systems to sell services to others. Likewise, satellite technology offered still another basis for competitive entry. Responding to these developments, the FCC began issuing a steady stream of decisions that gradually introduced competition into all aspects of telecommunications—even to a limited extent in local access. In long distance, the FCC decided in 1969 to allow MCI to compete with AT&T in offering private line common carrier service between St. Louis and Chicago. A year later, in the Specialized Common Carrier decision, the FCC opened private lines generally to competitive entry. In 1968, in the Carterfone decision, the FCC established technical rules that permitted some customer equipment that was not owned by the telephone company to be interconnected to the network; five years later, it generalized this decision by completely opening the customer equipment market to competition. The FCC also adopted the "open skies" policy for communications satellites, allowing anyone (except AT&T, which was initially barred) to launch domestic telecommunications satellites for any purpose. All these monumental decisions occurred before any generic deregulation movement and industry restructuring resulting from antitrust litigation and before much had been published by economists on the economics of the industry.

The FCC took a major retrograde step in its general move toward liberalization at about the time deregulation started to become popular elsewhere. In the 1976 Execunet decision, the FCC decided to draw the line on how far competition would be stretched. Execunet was MCI's conventional long-distance service. The FCC ruled that MCI could not enter this market, concluding that AT&T ought to have a protected monopoly in ordinary toll service. MCI appealed, and the D.C. Court of Appeals ruled in its favor, stating that the Com-

munications Act (unlike many regulatory statutes) contained a presumption in favor of competition and that the agency bore a burden of proof to show that long-distance competition was not in the public interest. By the time this decision was rendered, Carter appointees controlled the FCC and, as elsewhere, were ardently pursuing liberalization in all aspects of communications regulation. These officials decided not to try to establish an evidentiary record that would sustain the original decision.

Despite the generally procompetitive policies of the FCC, AT&T's control over the local switched telephone exchange gave it the power to block or slow down these competitive developments. Competing suppliers of long-distance service needed access to the local exchange system to make their services available to most customers. AT&T first denied them access and then provided an inferior type.[12] Competing suppliers of customer premises equipment had to be able to connect their equipment to the local loop and to be able to market their equipment on a "level playing field" with AT&T equipment. AT&T enforced stringent interconnection conditions that made it costly for competing equipment to be used by customers and, through bundling of telephone and equipment services, forced customers to pay AT&T for customer premises equipment even if they did not use AT&T's equipment. New data and information services required upgrading of the local and long-distance network. AT&T was slow to facilitate these services' availability. To do so meant retiring equipment that, according to the regulatory rules, would have continued to earn a profit for AT&T. Moreover, it meant forgoing the possibility that AT&T could monopolize these services when Bell was ready to provide them. State regulators were also concerned that AT&T was overcharging itself for Western Electric equipment, then passing these inflated costs through in regulated rates charged to customers. This behavior, it was argued, made it possible for AT&T to evade state rate regulation by shifting profits back to its unregulated subsidiary via excessive transfer prices.[13]

AT&T's monopoly had attracted the attention of the antitrust authorities at the U.S. Department of Justice since the turn of the century.[14] In 1974, the

12. A still controversial issue is whether the entry of long-distance carriers occurred simply because the regulated price structure forced AT&T's long-distance prices to be far above costs. On the one hand, competitors paid far less to local telephone companies. On the other hand, they were provided a distinctly inferior form of local access. Eventually, when BOCs were forced to provide equal access at the same price charged to AT&T, *all* the competitive long-distance carriers chose equal access rather than continued inferior access at a lower price. This suggests that the cost of inferior access exceeded the benefit of a lower price.

13. The evidence on this point is weak. Western Electric did cut prices after divestiture, but only after radically restructuring the company to cut costs. A more plausible story is that AT&T had simply grown fat from lack of competitive pressures. The evidence that AT&T delayed the introduction of new products and services to protect its "rate base" equipment and services monopoly was much stronger.

14. Antitrust concerns and challenges arising from AT&T's relation with Western Electric were first raised in 1908 and were serious at the time of the passage of the Communications Act of 1934, which transferred regulation of AT&T from the ICC to the FCC and ordered the new commission to study these relations. That study identified a variety of problems. The government then

Department of Justice brought an antitrust suit against AT&T.[15] The government charged that AT&T had violated Section 2 of the Sherman Act by monopolizing or attempting to monopolize a variety of telecommunications markets. The basic theory underlying the relief sought by the Justice Department was that the only portion of the telecommunications business that was likely to remain a monopoly was the local switched exchange system.[16] Long-distance interexchange service was conducive to competition, as was the provision of telephone switching equipment, customer premises equipment, and information services. As a firm that operated at all levels of the telephone business, AT&T had a conflict of interest. It had incentives to use its control over the monopoly segment of the business—the local loop—to protect itself from competition in the other segments of the business. It was argued further that the FCC was unable to regulate access to the local loop effectively, given the conflict of interest that existed between AT&T affiliates and even between state and federal regulation. As a result, the Department of Justice argued that the only way that competition could flourish in potentially competitive segments of the business was to prevent AT&T from using its control over the local exchanges to thwart competition in these other markets.

The antitrust suit against AT&T was settled in 1982 with the government getting most of the remedies that it sought. The settlement separated AT&T from its local operating companies (BOCs). The local operating companies were organized into seven separate, independent holding companies. Each provides local exchange and intrastate interexchange services in a specific region of the country. They were also required to provide "equal access" to competing long-distance companies. The local exchange networks could remain legal monopolies, subject to state rate regulation, at the discretion of the states. AT&T was allowed to retain Western Electric and most of Bell Labs. The local operating companies were given part of Bell Labs, now called Bell Communications Research, as a jointly owned research-and-development facility but were forbidden to manufacture telephone switching, transmission, and customer premises equipment, to offer long-distance service, or to offer certain information services within their franchise areas. These restrictions are subject to review every three years by the federal court administering the 1982 consent

brought an antitrust suit against AT&T after World War II seeking divestiture of Western Electric. This suit was settled in 1956 without requiring AT&T to divest Western Electric as the antitrust authorities had initially requested.

15. For more details on the contentions of both sides of the case, see Noll and Owen (1988).

16. A common claim is that Justice accepted the view that local service was a natural monopoly. In fact, Justice actually assumed that, regardless of the technical facts, state regulation and an incumbency advantage were likely to make local service a monopoly for the foreseeable future. But radio technology could prove this to be a poor forecast. By 1988, William Baxter, the assistant attorney general for antitrust, who negotiated the divestiture agreement, opined that the biggest mistake in the restructuring of telecommunications was letting the BOCs, rather than AT&T, inherit the rights to radio telephone service.

decree that accompanied the settlement of the government's antitrust case. The reorganization officially took effect in 1984.

The final irony of the history of structural controversy in telecommunications is the reversal of field by the Reagan administration Department of Justice on the basic theory of the AT&T divestiture. AT&T was formally broken apart in 1984; by 1986, the Department of Justice was advocating permitting the Bell operating companies to reintegrate into nearly all the prohibited competitive markets: manufacturing, information services, and long distance (except in their own service territories). The antitrust authorities argued that they now believed that regulatory authorities could prevent local telephone companies from making use of their local franchised monopolies for anticompetitive purposes in other parts of the industry. The fact that the late Reagan administration would propose undoing most of the early Reagan administration's single most important policy accomplishments in telecommunications is testimony to the enduring nature of the controversy over the structure of the industry.

Major liberalizing decisions by federal regulators took place in the 1980s regarding radio telephone services. Historically, the FCC assigned mobile telephone frequencies to specific industries for specific purposes. But, during the 1980s, the FCC has moved to a general first-come, first-served system that encourages joint and multiple uses. As a result, the spectrum allocated for mobile radio telecommunications is becoming less Balkanized and more like a traditional common carrier service—only in this case with multiple competitors. Second, in permitting the use of cellular telephone technology, the FCC rejected AT&T's proposal to create a single monopoly supplier and instead created a duopoly. This assured that at least one cellular operator in each city is not the local telephone company and therefore has no interest in making certain that cellular does not compete with the traditional local telephone network as a means of basic access. Moreover, because of policies liberalizing other mobile services, radio access to the telephone network is slowly growing among other radio licensees, notably so-called specialized mobile telecommunications. Today radio technology is too expensive and too inefficient in its use of the radio spectrum to be a viable competitor for local telephone access. But digital technology already developed but not deployed solves the spectrum problem, and the next technical generation down the line is expected to lower radio telephone costs to approximately 150–200 percent of wireline access. At this level, with its added valuable feature of mobility, radio telephone service holds the promise of becoming a viable competitor to local telephone companies.

6.5.2 Pricing Issues

Historically, pricing in telecommunications has been extremely inefficient. Prices bore little relation to the costs of corresponding services and carried a heavy burden of cross-subsidy. In general, these subsidies ran from long distance to local service, with about half the costs of local service being paid by

long-distance tolls. The cornerstone of the system was and is the basic monthly access charge for residents and businesses to connect to the telecommunications network through the nearest switch of the company that has the monopoly franchise to provide local service. Basic access is priced substantially lower for residences than for businesses; however, businesses have a second access possibility that reduces their costs substantially. If a business uses a large number of access lines, it can buy Centrex. The primary feature of Centrex is that it enables one person in an office to call another by dialing fewer numbers, but all such calls are routed through the local telephone company's nearest central office switch, just as if they were local calls. By purchasing Centrex, a company pays the high business access price only for a portion (10–20 percent) of its access lines. The rest are priced much lower—even lower than residential access.

The purpose of Centrex pricing is to induce companies not to buy their own small switch for handling their own intraoffice calls. This not only keeps the customer buying lots of lines but also eliminates some "bypass" possibilities for long distance, as explained below. Of course, whether Centrex is simply a reasonable competitive offering or a classic example of regulated monopolies engaging in cross-subsidization is a matter of continuing controversy. Competitors claim that Centrex must be subsidized if residential local access is subsidized because the former rate is lower than the latter. Local telephone companies respond that Centrex customers are, on average, less than half as far from the central office switch as other customers and so require less investment. Competitors respond that no other access prices are based on distance to the switch and that, in any case, telephone companies decide where to locate switches and can select these locations strategically to make Centrex costs lower but residential access more expensive. The debate is endless and proves mainly that regulatory cost allocation procedures rarely can resolve a dispute about whether a telephone company is setting anticompetitive or procompetitive prices.

Long-distance prices do not distinguish between residences and businesses, but they do come in three general types: interexchange toll calls, intrastate inter-LATA toll calls, and interstate toll calls. Interexchange service is a call within the local service territory of a local telephone company that must be transported from one central office switch to another. Often adjacent central office switches are connected by dedicated trunks, and companies usually impose no toll charge for such a call. But some calls within a local service territory—called a local access and transport area (LATA)—travel hundreds of miles and are indistinguishable from other forms of long distance. Nevertheless, in most states, local telephone companies have a legal, franchised monopoly in these intra-LATA toll calls as well. In these states, carriers such as AT&T or MCI either are barred altogether from permitting such calls on their network or, if they make them, are required to pay the local telephone company all or most of the charges it would have collected had the call gone over its

network. In general, intra-LATA toll prices are extremely high in relation to cost. Long-distance calls within LATAs by local telephone companies account for approximately 25 percent of all long-distance revenues and cover almost as large a share of local exchange costs as did interstate long distance prior to the regulatory changes of the 1980s.

The second category of long-distance service is calling between LATAs—or between the service territories of a local company (or two local companies)—within the same state. The prices for these intrastate inter-LATA toll calls, as well as entry conditions, are regulated by states, except that, since 1984, the divestiture agreement has barred Bell operating companies from providing this service. States could hand this service entirely to a single long-distance carrier, and a few small states did so after divestiture. But, in general, this market contains numerous firms. States sometimes regulate the price of intrastate inter-LATA long distance; however, because long distance is becoming substantially competitive, the most important regulated price is the charge the long-distance carriers pay to reach their customers through the local telephone network. Most states set usage-based carrier access charges—that is, they tack on a charge per minute of use to long-distance calling that is given to local telephone companies. In some cases, this charge equals or exceeds the charge for the long-distance portion of the call, despite the fact that the latter can be for hundreds of miles but the former is for only a few miles.

Finally, the federal government (i.e., the FCC) regulates long-distance calling between states. Divestiture barred Bell operating companies, but not other providers of local service, from the interstate long-distance market. The federal government regulates only AT&T's prices and even here has been a passive player, for AT&T annually or more frequently initiates proposals to lower its rates. In addition to AT&T, MCI, and Sprint, the market contains a few additional national companies and many regional companies. The latter normally offer their customers the opportunity to call anywhere, but all or most of their network is simply leased space on the networks of the three larger players. The small facilities-based carriers design their routes to minimize costs in a particular region, focusing their marketing on customers whose long-distance calling is predominantly to a few cities.

The most important price that federal regulators control is the access charge by local telephone companies for interstate long-distance origination and termination in a local exchange. Until the mid-1980s, all access charges were carrier use charges, and approximately half the costs of the three major long-distance carriers were payments to local telephone companies. In 1985, the FCC began to transfer the federal share of local cost responsibility—about 25 percent of the total cost of local exchange service—to a monthly subscriber line charge. To a subscriber, this charge is indistinguishable from the monthly access price set by the state. By 1990, the FCC had transferred about half the federal share of local costs to subscriber line charges; this, in turn, meant approximately a 25 percent reduction in interstate long-distance rates during

the first five years after the policy was adopted but also about a 20 percent increase in residential access prices and a 10 percent increase in business access prices.

The last important aspect of the telephone system is the pricing of so-called bypass services. A customer can avoid paying carrier access charges in the originating local telephone area by connecting directly to a long-distance network. Local telephone companies and long-distance carriers both sell "private line" service that enables a customer to do this. A private line can connect the customer to the entire network of a long-distance carrier, to a specific office in another city, or to another local calling area. The second is the business that MCI initially entered in 1969, but it quickly began offering the first and third as well. The Execunet case arose when MCI offered long distance without a private line.

Because carrier usage charges are still a significant part of long-distance charges and were half of them before 1985, usage fees create an incentive for large customers to use bypass—even if it is actually more costly (in terms of actual costs, not prices). Seeing this irrationality in pricing, MCI and Sprint picked bypass (private lines) as their point of entry for precisely this reason. They could offer large business customers massive savings in long-distance charges, inducing them to try these upstart competitors against Ma Bell.

From an efficiency perspective, the problem is paying for a fixed cost (the local access connection) with a usage-based charge. This prevents the price of usage from equaling its cost and thereby discourages use. The compensating price change is lower lump sum access charges for connections to the local exchange. The justification given for this practice is to encourage "universal service," that is, telephone subscription by every household. But, in an advanced economy like the that of United States, lower access charges for connection to the local loop do not encourage much increase in the penetration of telephone service. In the United States, the demand for access is almost perfectly inelastic for all business and all but the poorest households. Virtually everyone has a telephone and would continue to have one if the price went up a few dollars. Hence, carrier usage charges reduce long-distance calling but produce almost no offsetting increase in basic access subscription. This constitutes almost a total net loss from a societal perspective.

The importance of carrier access charges goes beyond their distorting effect on ordinary long-distance telephone calls; it also distorts the development of new information services. Most of these services use a large, centralized data base and are most efficiently used by accessing them for a large area—perhaps the entire country—by long distance. For smaller customers without bypass alternatives, carrier use charges discourage use. Meanwhile, purely local services are encouraged because local usage charges are either zero (most residences) or small (businesses) compared to long distance. Hence, the price structure tends to distort the types of information services that are offered to small users.

The FCC's pricing policy since divestiture has been to lower usage charges to the small actual costs of usage and to increase monthly access prices to cover the rest of the federal share of local service costs. From an economic efficiency standpoint, this is an excellent policy. From a political standpoint, it is extremely controversial. Indeed, in January 1986, Congress fell one Senate vote short of overturning this policy (it had already passed the House). This is a very puzzling circumstance. The explanation probably lies in two facts about the economics and politics of telephones. First, many people make very few interstate long-distance calls. One study by Texas regulators found that most customers make one or zero interstate calls per month, but, of course, Texas is a very big state. A large part of long-distance calling is for business and so is not paid by individuals directly; instead, it is buried in the costs of business products and services. Second, the monthly basic charge for access is a visible price faced by almost all Americans; long-distance charges, by contrast, are less visible and far more complex. It is far easier to see and to become aware of a change in access prices than a change in long-distance prices. Thus, the FCC's policy initiative increases a visible, widely shared price in return for lowering a large number of largely invisible ones. Political leaders most likely were not so much voting against efficiency or in favor of a local telephone company special interest as they were simply fearing that voters would react negatively to this particular kind of change. Nonetheless, in the closest congressional vote in the regulatory reform era, efficiency won—but only after the FCC had trimmed its sails by promising to phase in subscriber line charges over several years. Thus, the efficiency benefits of the plan will accrue gradually in hopes that it will minimize the chance of political backlash against increases in basic access prices.

6.5.3 Postreform Performance

What have been the effects of the dramatic change in the structure and regulation of the telecommunications industry? It is useful to examine what has happened in each of the segments of the telecommunications business since AT&T was reorganized in 1984 (for more details, see Noll and Owen 1989).

Customer Premises Equipment (CPE)

Now that customer premises equipment has been unbundled from telephone service, interconnection restrictions removed, and self-dealing conflicts largely eliminated, a vigorously competitive market has emerged. Equipment prices have fallen, and the kinds of equipment that are available have increased. Despite Western Electric's historical claims that it was an efficient equipment supplier, offering customers what they needed at a fair price, it has not been successful as a CPE supplier in this new competitive environment. Western's market share has fallen from 85 to 20 percent. This fall began before divestiture, owing to FCC policies to unbundle CPE and to promote competition among suppliers.

Telephone Transmission and Switching Equipment (TSE)

The evolution of competition in telephone switching equipment has been slower. Competition has increased as the BOCs have turned to some suppliers other than AT&T/Western. AT&T is still the major player, with a national market share of about 60 percent (down from 85 percent before divestiture). Northern Telecom, the manufacturing arm of Bell Canada, is second. Contrary to common belief, European and Japanese firms have not been particularly successful in the market, although, by buying U.S. production facilities, Siemens appears well positioned to become a third significant supplier. Competitive pressures have stimulated more rapid diffusion of new TSE technology, especially fiber optic transmission lines, computerized switching equipment, and digital networks. Much of this equipment is provided by computer and microelectronic firms that were not in the industry in the early 1980s.

Long-Distance Service

Three strong players compete in the long-distance market offering voice and data services throughout the entire United States. Prices for a wide variety of long-distance voice, data, and video services have fallen dramatically. A wide array of specialized services are available to business and residential customers. The major issue remaining with regard to competition in long-distance markets is when competition will permit complete deregulation. AT&T still has about 60 percent of the market, although its market share understates the intensity of competition. In 1989, the FCC took a step in the direction of regulation by abandoning traditional cost of service regulation of AT&T's rates in favor of a simplified "rate cap" system. The new procedure gives AT&T more flexibility to meet competition and provides strong incentives for AT&T to reduce costs and increase productivity yet still provides safeguards against monopoly abuses. The new procedure is a natural transition state to complete deregulation of long-distance rates sometime in the 1990s.

Local Service

An important change in FCC policy during the 1980s has been to reduce substantially—and eventually to eliminate—the subsidies of local service from overpricing long distance. While the new FCC policy has stopped the growth of subsidies from long distance to local service and improved efficiency, in doing so it has put pressures on local prices (Noll 1985). Table 6.7 shows the average price to residential customers for unlimited local service during the past fifty years. Beginning in 1985, these figures also include the FCC's subscriber line charge (SLC). Since divestiture, residential local service has increased $5.00 per month, or about 45 percent, about half of which is SLC. In the five years prior to divestiture, local rates rose by about $3.40, an increase of 40 percent. This comparison, however, understates the effects of FCC-led rate reform, for the earlier period was one of rapid inflation and high

Table 6.7 **Charge for Unlimited Local Service (dollars)**

January		January		January		October	
1940	3.44	1955	5.29	1970	5.87	1983	11.58
1941	3.63	1956	5.34	1971	6.16	1984	13.35
1942	3.70	1957	5.37	1972	6.51	1985	14.54
1943	3.83	1958	5.44	1973	6.79	1986	16.13
1944	3.84	1959	5.60	1974	7.14	1987	16.66
1945	3.84	1960	5.64	1975	7.31	1988	16.59
1946	3.84	1961	5.70	1976	7.77		
1947	3.87	1962	5.71	1977	7.98		
1948	4.09	1963	5.75	1978	8.16		
1949	4.20	1964	5.76	1979	8.19		
1950	4.47	1965	5.78	1980	8.32		
1951	4.69	1966	5.77	1981	8.82		
1952	4.83	1967	5.71	1982	9.73		
1953	5.18	1968	5.72	1983	11.14		
1954	5.18	1969	5.79				

Source: Lande (1989, 16).

Note: Data exclude equipment rental but include estimates of state and local taxes. Data for 1983–88 do not include maintenance of inside wiring. Data for 1940–83 (January) are from AT&T; remaining data are from FCC survey of ninety-five cities.

interest rates, both of which can be expected to increase local telephone rates. As is apparent from the table, before the stagflation problems of the 1970s, local rates were highly stable.

The prices in table 6.7 are averages over cities and states having very different price structures. Table 6.8 shows the trends in local service prices for businesses and residences during the 1980s. These figures do not include the SLC but instead show the rates established by state regulators. As is apparent from the table, two major features of telephone pricing are the differences between rural and urban rates and the spread between business and residential rates. In 1980, before either divestiture or long-distance competition had any substantial effect on the industry, residential rates in smaller communities were about two-thirds the prices charged in the large cities, while small town business rates were less than half the prices charged to big city businesses. During the postdivestiture era, these differences have fallen, especially the differences in business rates (for more details, see Noll and Smart 1990).

Basic access prices bear little relation to the cost of service. The cost of local access service is extremely dependent on the size of the community. Nationwide, the average monthly cost of local exchange service is approximately $20.00; however, in large cities it is in the mid-teens, whereas in some rural areas it can approach $100 per month. The marginal cost of service is lower, with recent estimates varying from $10.00 to $13.00 in larger cities.

Together, the price and cost data shed interesting light on the system of cross-subsidies in telephone sources. If the FCC's subscriber line charges are

Table 6.8 **Rates for Single-Line Service: Average for all Companies (years)**

Size of Locality (no. of terminals)	Predivestiture		Divestiture Plans		Postdivestiture				Change		
	1980	1981	1982	1983	1985	1986	1987	1988	1980–86	1983–86	1986–88
Business											
Smallest	14.33	15.23	17.04	19.98	25.18	26.04	25.83	25.63	11.71	6.06	−.41
1,000	14.71	15.62	17.44	20.31	25.45	26.29	26.08	25.87	11.58	5.98	−.42
5,000	16.33	17.26	19.02	21.80	26.68	27.41	27.19	26.99	11.08	5.61	−.42
25,000	19.23	20.23	22.08	25.33	29.69	30.34	30.00	29.77	11.11	5.01	−.57
50,000	20.97	22.14	24.39	27.54	32.32	32.78	31.99	31.74	11.81	5.24	−1.04
100,000	22.93	24.11	26.27	29.64	34.47	34.72	34.22	34.04	11.79	5.08	−.60
250,000	25.29	26.96	29.25	32.52	37.66	38.05	37.55	37.27	12.76	5.53	−.78
500,000	27.82	29.54	30.78	34.43	39.08	38.86	38.74	38.33	11.04	4.43	−.53
750,000	27.91	29.20	33.43	35.23	38.61	37.69	37.49	36.95	9.78	2.46	−.74
1,000,000	31.55	34.21	34.06	37.56	38.40	37.34	37.22	36.33	5.79	−.22	−1.01
Difference	17.22	18.98	17.02	17.58	13.22	11.30	111.39	10.70	−5.92	−6.28	−.60
No. of companies	50	50	51	50	48	48	48	48			
Residential											
Smallest	6.49	6.69	7.42	8.64	10.68	10.92	10.78	10.67	4.43	2.28	−.25
1,000	6.60	6.82	7.54	8.76	10.78	11.01	10.86	10.76	4.41	2.25	−.25
5,000	7.05	7.25	7.97	9.20	11.15	11.36	11.21	11.11	4.31	2.16	−.25
25,000	7.84	8.05	8.82	10.11	11.95	12.13	11.96	11.85	4.29	2.02	−.28
50,000	8.26	8.54	9.43	10.73	12.60	12.71	12.52	12.40	4.45	1.98	−.31
100,000	8.70	9.02	9.92	11.21	12.94	13.07	12.86	12.78	4.37	1.86	−.29
250,000	9.38	9.72	10.56	11.76	13.64	13.76	13.54	13.44	4.38	2.00	−.32
500,000	9.87	10.31	10.97	12.27	13.99	13.95	13.68	13.56	4.08	1.68	−.39
750,000	9.74	10.02	11.33	11.95	13.12	13.11	12.94	12.76	3.37	1.16	−.35
1,000,000	9.56	9.94	10.37	11.41	13.08	13.28	13.27	12.98	3.72	1.87	−.30
Difference	3.07	3.25	2.95	2.77	2.40	2.36	2.49	2.31	−.71	−.41	−.05
No. of companies	52	53	54	54	51	51	51	51			

Source: National Association of Regulatory Utility Commissioners, *Exchange Service Telephone Rates,* 1980–83, and *Bell Operating Companies Exchange Service Telephone Rates,* 1985–88.

added to the figures in table 6.8, in cities with more than about 50,000 terminals (about 100,000 people), residential customers pay more than $15.00, which exceeds the marginal cost and approaches the average cost. Meanwhile, businesses in these cities are paying $40.00 a month, which is approximately double the nationwide average cost and triple the marginal cost. Obviously, in large cities, business access is a major *source* of subsidy, and residential access is not subsidized significantly, if at all. In smaller towns and rural areas, residential prices and probably business prices are well below average and marginal cost. Clearly, small towns and rural areas are the primary recipients of the subsidy. Thus, the generalization that long distance subsidizes local service is misleading. It would be more accurate to say that long-distance service and business access service in larger cities subsidize residential and business access in less populated areas. The cross-subsidy is targeted not at residences but at less densely populated areas.

One important implication of these facts it that the "universal service" justification for price regulation is largely a hoax. Even in small towns, businesses do not need subsidies to be telephone subscribers, and subscribers in larger cities are not subsidized. In fact, cross-subsidization in telecommunications resembles the scheme in transportation before deregulation—subsidization of small communities. Moreover, while the cross-subsidy in the telephone industry is reduced after the reforms of the 1970s and 1980s, it is still present. In contrast, deregulation of trucks, rails, and airlines has, through competition, eliminated cross-subsidies.

Productivity Growth and Cost Savings

The former AT&T companies have been able to achieve enormous cost savings and have demonstrated an extraordinarily high rate of productivity growth since the divestiture in 1984. Despite substantial growth in the volume of business, aggregate employment among the former AT&T subsidiaries has declined substantially. The pressures of competition and the removal of structural and regulatory distortions have led to cost savings far beyond what anyone had anticipated. This raises serious questions about whether AT&T was as efficient as many people used to think it was.

Overall Results

The overall consequences of reforms in telecommunications regulation is difficult to assess by a single measure. Table 6.9 contains one relevant piece of information, the annual rates of change in prices for telephone services and a number of other items. The figures compare the past fifty years to the ten years after the Execunet decision, letting MCI into the message toll long-distance business. It is clearly difficult to detect any trend after 1978; telephones have always performed about 2 percent better than the CPI and continue to do so. Telephone prices also perform better than prices of other regulated utilities, and this spread increased after 1978; however, this is due to the greater impor-

Table 6.9 Annual Rates of Change for Various Price Indexes (%)

	1935–88	1978–88
CPI, all goods and services	4.2	6.1
CPI, all services	4.6	7.5
CPI, telephone services	2.2	4.3
CPI, piped gas	3.8	7.1
CPI, electricity	2.4	6.2

Source: Industry Analysis Division (1989, 4).

tance of fuel costs in the other industries rather than to some fundamental change in productivity treads. These figures do not include either customer equipment or new communications services that use the telecommunications network. Were these included, the performance of the sector since 1978 would be substantially better than the fifty-year trend.

Table 6.10 contains more details about telecommunications pricing since 1978. It clearly shows the divergence between local service and long-distance price trends. It also reveals an interesting pattern between the CPI and the overall telephone price index. Telephones did much worse in the early 1980s than since 1986. The price increases in the early period reflect regulatory lag from the inflation of 1978–80; by 1983, this adjustment was over. Then, for three years after divestiture, telecommunications prices rose more rapidly than the CPI. The most plausible explanation is the disrupting effect of divestiture and accommodating changes in price regulation. But, since 1987, the price performance in telecommunications has been far better.

While difficult regulatory issues remain to be resolved and the transition to competition is not complete, as the data show, the telecommunications industry is more efficient, more flexible, and more competitive than it would have been without the dramatic and controversial changes of the 1970s and 1980s. The rough adjustment period apparently is largely over; the future holds promise for mounting benefits from these changes. Nevertheless, structure and prices in telecommunications are still issues engendering great political controversy. In the 1990s, as states attempt to assert more authority and the BOCs seek approval to reintegrate, further upheavals certainly cannot be ruled out.

6.6 The Natural Gas Industry: A Saga of Rent Control[17]

Natural gas price regulation can be understood only in the context of the bizarre evolution of regulatory policy in this industry. Many of the industry's problems were caused by federal regulation of the price of natural gas in the field, which sought to capture scarcity rents associated with competitive gas

17. With apologies to Stephen Breyer (1982, chap. 13). See also Braeutigam and Hubbard (1986), Broadman and Montgomery (1983), and Lyon (1990).

Table 6.10 Changes in Telephone Price Indexes, 1978–88 (%)

Year	CPI	All Telephone Services	All Local Charges	Monthly Residential Service	Interstate Toll	Intrastate Toll
1978	9.0	.9	1.4	3.1	−.8	1.3
1979	13.3	.7	1.7	1.6	−.7	.1
1980	12.5	4.6	7.0	7.1	3.4	−.6
1981	8.9	11.7	12.6	15.6	14.6	6.2
1982	3.8	7.2	10.8	9.0	2.6	4.2
1983	3.8	3.6	3.1	.2	1.5	7.4
1984	3.9	9.2	17.2	10.4	−4.3	3.6
1985	3.8	4.7	8.9	12.4	−3.7	.6
1986	1.1	2.7	7.1	8.9	−9.5	.3
1987	4.4	−1.3	3.3	2.6	−12.4	−3.0
1988	4.4	1.3	4.5	4.5	−4.2	−4.2

Source: Industry Analysis Division (1989, 5–7).

supplies rather than to control monopoly or oligopoly pricing.[18] The structure and regulation of the natural gas industry, especially the changing regulatory environment, are complex. Figure 6.14 contains a diagram depicting the structure of the industry and the relation between different segments. Figure 6.15 contains a diagram depicting the regulatory environment. These figures will be useful in understanding the discussion that follows.

Municipal and state regulation of local gas distribution goes back to the mid-nineteenth century. The economic rationale for price and entry regulation of gas distribution companies was (and is) that gas distribution is a natural monopoly and that costs could therefore be minimized if distribution services were provided by a single firm within a single geographic area. Price and entry regulation was regarded as necessary to promote reliability, safety, and least-cost supply and to prevent monopoly prices.

Regulation of prices and entry into local gas distribution began prior to the development of large natural gas reserves and an extensive long-distance pipeline network to move the gas from where it was found to where it was consumed. Originally, local gas distributors produced gas themselves from coal and coke. Because of its relatively high cost and low thermal content, manufactured gas was used primarily for lighting and cooking, although the lighting market was rapidly captured by electricity in the early part of the twentieth century.

In the 1920s, "waste" natural gas became available in conjunction with the growth of petroleum extraction, and technological progress made possible economical long-distance transportation of natural gas. These developments led

18. Some gas is sure to be cheaper to extract than other gas. Hence, in a competitive world, the owner of cheap gas will make far higher profits than the owner of more expensive but economically worthwhile gas. The higher profits in cheap gas are called *scarcity rents.*

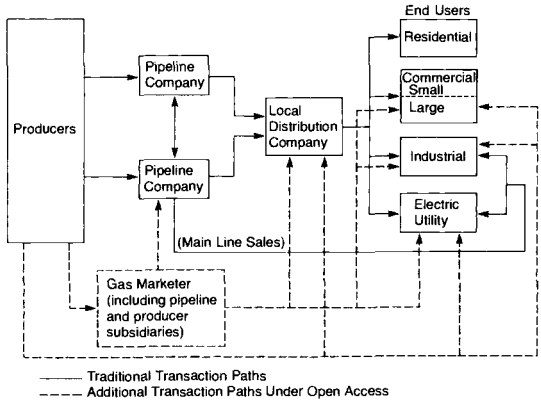

Fig. 6.14 Principal buyer/seller transaction paths for natural gas marketing
Source: U.S. Department of Energy (1989, 2).

to fundamental changes in the natural gas industry. Beginning in the 1930s, and accelerating after World War II, cheap natural gas became available in many cities remote from oil- and gas-producing areas. Manufactured gas plants were closed, and the market for gas expanded rapidly as less costly natural gas was used for healing and as an industrial and electric utility boiler fuel. Local distributors relied on independent interstate pipelines to acquire gas and to transport it to them.[19]

For over fifty years, interstate natural gas pipelines provided gas supplies and transportation services as a bundled product at a single price pursuant to long-term contracts between the gas distributor and the pipeline. Gas pipelines were not common carriers, and gas distributors did not purchase directly from gas producers. Gas pipelines purchased gas under long-term contract from gas producers to fulfill their obligations to local gas distribution companies (LDCs). Federal regulation of interstate pipelines was introduced with the passage of the Natural Gas Act of 1938. The economic rationale for pipeline regulation was that pipelines had natural monopoly or oligopoly characteristics. The states sought federal regulation of interstate pipelines because state regulation of interstate pipeline charges was preempted by the commerce clause of the Constitution. Most cities were and are served by a small number of pipeline companies, and, in the absence of price regulation, it was thought that pipelines would be in a position to charge monopoly prices for gas delivered to the city gate. The Natural Gas Act of 1938 gave the FPC (now the FERC) authority to regulate the price of gas delivered by interstate pipelines to gas distribution

19. Although it has not been studied in any detail, we suspect that the combination of state laws regarding public utility corporations and restrictions provided for in the Public Utility Holding Company Act of 1935 may have constrained the incentive and ability of interstate gas pipelines to integrate forward into gas distribution. Pipeline regulation made integration of interstate gas pipelines upstream into gas production financially unattractive as well.

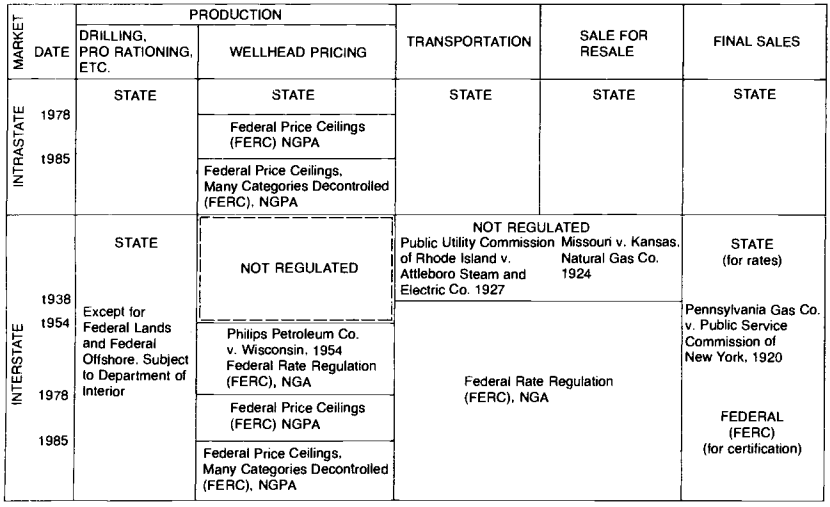

Fig. 6.15 Regulatory jurisdiction of the natural gas industry
Source: U.S. Department of Energy (1989, 3).

companies and direct service customers. The associated prices were based on both the average cost of gas purchased from producers and the average historical cost of transporting it. Pipelines also took on a long-term obligation to provide gas supplies to local gas distributors at rates regulated by the FPC. That is, the FPC forced the industry to rely on regulated long-term contracts between pipelines and local distributors. The FPC also endeavored to get the pipelines to secure long-term contracts for adequate supplies of gas to meet the needs of downstream distributors.

Prior to 1954, natural gas production was not subject to price or entry regulation. The production of natural gas is a highly competitive industry, and there is no natural monopoly rationale for regulating the field price of natural gas. If market power is present in the relation between pipelines and gas producers, it is a monopsony problem. However, after World War II, gas distributors and their state regulators sought to force the FPC to extend price regulation to gas producers. The distributors' motivation for seeking the extension of federal regulation to the price of natural gas purchased by pipelines in the field had nothing to do with monopoly prices. Rather, it simply reflected the desire of distributors to extract a share of the scarcity rents associated with existing natural gas reserves and the costs of extracting gas from them. Much of the gas being sold to interstate pipelines after World War II was developed in conjunction with oil many years earlier. It was originally a "waste" product for which there was little demand and was sold at a very low price to consumers located close to gas-producing areas. As the demand for natural gas grew after World War II, field prices under new contracts soon began to rise significantly. In

response to the demand for field price regulation, the FPC claimed that it lacked the statutory authority to regulate natural gas production. In 1954, in response to a lawsuit brought by the state of Wisconsin, the Supreme Court determined that the Natural Gas Act of 1938 required the FPC to regulate the prices that interstate pipelines paid for natural gas. Congress subsequently passed legislation exempting gas production from price regulation, but the bill was vetoed by President Eisenhower.

Since the 1954 decision, the natural gas industry has been in almost continual regulatory and political turmoil resulting largely from the efforts of the FPC, the FERC, and later Congress to regulate the price of natural gas in the field.[20] The FPC's initial efforts to set prices on a producer-by-producer basis using conventional public utility cost of service principles quickly became a regulatory morass (Breyer 1982, 248–50). In the 1960s, the FPC began to set ceiling prices for "old" gas and "new" gas in each of five producing areas, based on the average cost of finding and producing natural gas discovered at different times in each area (Breyer 1982, 250–52).

Areawide field prices that were too low combined with average cost pricing for gas delivered to distributors (the average cost of gas purchased by a pipeline pursuant to all its contracts) led to severe supply shortages first in the market for new gas reserves in the late 1960s and then in the market for flowing gas beginning in the early 1970s (Breyer 1982, 244–47). This in turn led to a complex set of rules to allocate the shortages among different customer classes, with existing residential customers getting the highest priority and industrial and utility customers who could switch to oil getting the lowest priority. Dislocations in world oil markets in the mid-1970s made the growing shortages of natural gas even worse. Oil and gas are close substitutes in many end uses. As the price of oil rose, the demand for natural gas increased, and the price of natural gas in unregulated intrastate markets rose along with the price of oil. Although the FPC increased natural gas prices in 1974, in 1976 the price of intrastate gas was twice the price of interstate gas (Carpenter, Jacoby, and Write 1987).

Policymakers faced a classic regulatory dilemma during the 1970s. The price of natural gas sold in interstate markets was being held far below market clearing levels. Since the historical average cost of natural gas, the foundation for FPC field price regulatory policy, had not risen with market values, traditional rate-making methods could not possibly yield market clearing prices. The large unregulated intrastate market caused producers to bypass the interstate market to supply gas where the price was highest, making the shortages in the interstate market even worse. Deregulation of field prices was an obvious

20. Until 1979, natural gas that was produced and sold to an intrastate pipeline for resale within the same state was exempt from federal regulation. Separate intrastate markets emerged in Texas and Louisiana. Field prices for intrastate natural gas eventually climbed far above field prices for natural gas dedicated to interstate pipelines. Shortages did not develop in the intrastate markets.

alternative; however, deregulation would transfer an enormous amount of income from consumers and consuming regions of the nation to producers and producing regions. Although the "natural gas problem" was hotly debated in Congress during the 1970s, regulators spent most of the decade trying to allocate gas shortages.

Soon after President Carter was elected, his administration sought to have new, comprehensive energy legislation passed by Congress. The proposed National Energy Act eventually was broken into several different parts dealing individually with oil, natural gas pricing, natural gas allocations, electric utility regulation, conservation, and research and development. After bitter debate, Congress passed the Natural Gas Policy Act (NGPA) in late 1978 (the intense lobbying over the NGPA was well captured in a piece produced by PBS soon afterward). The NGPA was designed to provide for a transition from relatively low regulated prices to higher market clearing prices by moderating the short-run impact of higher prices on natural gas consumers. A companion piece of legislation (the Fuel Use Act) sought to erase the allocation problem by restricting the use of natural gas to generate electricity and as a boiler fuel in industry, which it was argued involved "inefficient" uses for natural gas.

The NGPA sought to achieve its objectives by extending federal regulation of field prices to intrastate natural gas and by establishing a complex set of rules for determining the prices of different "vintages" of natural gas. The base price of "old" gas (reserves from which gas was flowing before April 1977) was fixed at prevailing levels, with automatic adjustments in the base price for inflation as measured by the GNP deflator. The price of "new" gas was set higher, but below what was then thought to be the market clearing level. The legislation contained adjustment provisions that allowed the ceiling price for new gas to increase gradually to the projected market clearing price in 1985. The latter was based primarily on projections of the price of oil (the 1985 gas price target was based on the assumption that, in 1985, the price of oil would be $15.00 per barrel in 1979 dollars). "New" gas prices were scheduled to be deregulated in 1985 as they reached projected market clearing levels, while certain categories of "high-cost" gas were deregulated immediately.

The result of these regulations was that, by 1981, gas in the field was selling at anywhere between $1.00 and $11.00 per thousand cubic feet, depending on the regulatory category into which it fell. Each pipeline held a portfolio of contracts, each of which carried different prices. Pipelines sold gas to local distribution companies and direct service customers at the average price of the gas associated with this portfolio of contracts.

The NGPA also contained provisions that explicitly allowed the FERC (the successor agency to the FPC) to authorize interstate pipelines to provide unbundled transportation service to transport gas owned by intrastate pipelines or local distribution companies. The intent of this legislation appears to have been to provide a mechanism for distributors to acquire gas in the intrastate market to alleviate shortages in the interstate market. While interstate pipelines

had traditionally sold gas and transportation service bundled together, the FPC had approved some transportation-only service for selected high-priority customers whose gas supplies in the interstate market had been curtailed. This section of the NGPA appears to have been inserted to provide a limited mechanism to help the FERC deal with shortages affecting certain priority users.

President Carter barely had time to sign the NGPA when the Iranian revolution led to another major dislocation in world oil markets. The average refiner acquisition cost of crude oil rose from $12.50 in 1978 to $35.00 in 1981. Oil prices once again rose dramatically relative to the price of natural gas specified in the NGPA (fig. 6.16). Almost as soon as it was written, the assumptions on which the NGPA's natural gas price adjustment provisions were based became invalid as market conditions changed dramatically. In particular, it appeared that gas prices would be too low through 1985 and then "fly up" to market clearing levels as "new" gas supplies were deregulated.

The unification of the interstate and intrastate markets made it possible for interstate pipelines to acquire gas reserves again. However, because the NGPA had fixed prices at what appeared to be levels below their market clearing values (at least until 1985), gas pipelines engaged in intense nonprice competition for gas by offering to contract for gas supplies pursuant to terms and conditions that had very favorable provisions from the producers' perspective. In particular, gas pipelines signed long-term contracts with very high (80–95 percent) minimum take or pay provisions. These contracts were based on projections of growing natural gas demand and rising prices and caused pipelines to bear the risks of changes in natural gas prices after 1985. It didn't seem to occur to the pipelines or policymakers that not all the contracted gas could be sold. After all, for thirty-five years, the major problem that gas pipelines faced was getting enough gas supplies to meet the needs of their customers.

After the initial run-up in oil prices in 1979–81, two events disrupted the

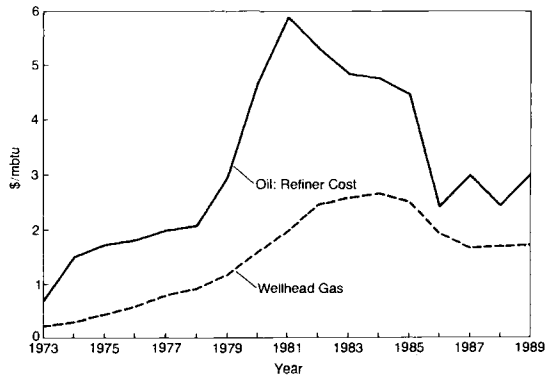

Fig. 6.16 Gas vs. oil prices
Source: U.S. Department of Energy, *Monthly Energy Review* (various issues).

institutional arrangements induced by the NGPA. First, oil prices began to decline after 1981. At first, the decline was gradual, but, in 1986, the oil market collapsed (see fig. 6.16). Second, the economy experienced a severe recession in 1981–83. The recession was particularly severe in some industrial sectors that consumed significant quantities of natural gas (e.g., steel and autos). Moreover, structural changes in the economy that were accelerated by the recession had a permanent adverse impact on these sectors, resulting in a permanent reduction in natural gas demand. Natural gas consumption fell by nearly 20 percent between 1980 and 1983.

Of course, as these changes took place, NGPA field price regulations and long-term contracts between gas producers and pipelines kept operating. As oil prices fell, gas prices rose (see fig. 6.16), and natural gas consumption fell. The long-term take or pay contracts became increasingly onerous to the pipelines as the rising regulated/contract prices and minimum take obligations reinforced one another. If gas pipelines could not sell all the gas they had contracted for, they tried to pass along the full cost of minimum take obligations as higher prices to local gas distributors. Local distributors also had minimum bill contracts with pipelines and tried to pass the price increases along to retail customers. Furthermore, since gas pipelines could not sell all the gas they had contracted for, a surplus of natural gas began to emerge by 1983, and field production was curtailed. Spot gas was available in the field at prices substantially less than the prices pipelines were paying in long-term contracts and passing along to consumers. In a few short years, a serious gas shortage had been transformed into a serious gas glut.

Gas pipelines faced a serious problem. They had contracted for gas that they could not sell at uniform regulated prices that would allow them to recover the costs of al their contractual obligations. As oil prices collapsed after 1985, the retention of their largest price-sensitive customers with fuel-switching capabilities became increasingly difficult. Pipelines faced three choices. They could swallow tens of billions of dollars in excess take or pay liabilities and continue to market and price gas according to prevailing regulatory procedures, recovering as much as they could from their LDC and direct service customers on the basis of prices determined by traditional average cost pricing principles. They could breach their contracts with producers, trying to prevail in court on the basis of the force majeure provisions in contracts, or ultimately to renegotiate the contracts. They could try to sell more gas by offering lower prices for gas to new customers and to price-sensitive old customers who would otherwise switch to oil while continuing to charge captive customers higher rates.

The pipelines initially tried to do a little of each. First, pipelines sought to pass as much of their purchased power costs on to local distributors as they could; however, local distributors also served price-sensitive customers and had to deal with state regulators who pressured them to minimize their minimum bill obligations. They resisted paying for take or pay liabilities associated with gas supplies in excess of what they could sell and sought protections in

pipeline rate proceedings at the FERC. Gas pipelines also began to breach some contracts and to insist on renegotiating others. Finally, gas pipelines began to utilize new marketing methods to obtain new customers and retain existing customers who might otherwise have switched to oil.

Of particular interest was the decision of some pipelines to offer brokering packages through which they would acquire specific quantities of low-priced spot gas in the field for specific LDC or direct service customers and then transport it to them using an unbundled transportation rate. The brokered gas could be gas that the pipeline would otherwise be obligated to take under its contracts with producers. By limiting these special marketing programs to new customers and customers with fuel switching capabilities, the pipelines could sell more gas at smaller margins without cutting into the revenues that they were able to earn from captive customers. In short, they engaged in classic third-degree price discrimination.

This "unbundling" response by some pipelines to the economic crisis resulting from historical regulatory rules, contractual arrangements, and changing economic conditions ultimately led to profound changes in the way natural gas is contracted for in the field and transported by pipelines. While the provision of unbundled transportation service had once been an exception, used in special cases to cope with shortages, it is now the norm. Local distributors and direct service customers now routinely contract directly with producers for a significant fraction of their gas, relying on pipelines for unbundled transportation service to move this gas. However, LDCs continue to rely on pipelines for traditional bundled gas supplies for a significant fraction of their needs, especially during the winter when spot gas supplies are more costly and less reliable.

The FERC initially supported the pipeline's efforts to increase gas sales by using unbundled transportation arrangements to engage in price discrimination and welcomed the associated net revenues that could be applied to their fixed costs, thereby reducing costs attributable to captive or core customers (FERC Orders 319 and 234-B). The resulting price and access discrimination was justified as providing benefits to captive customers who might otherwise be stuck with paying for the pipeline's fixed costs. Then, in 1985, the D.C. Circuit held that these programs were illegal under the statutes governing the FERC's regulation of natural gas pipelines. The rejection of the new program came just as the world oil market was collapsing, reducing further the maximum prices that pipelines could profitably charge for gas on standard tariffs. While average field prices had begun to decline by 1985 in response to contract renegotiations and deregulation of new gas prices in 1985, they did not fall nearly as much as the price of oil (see fig. 6.16). Furthermore, responding to complaints from local gas distributors, in 1984 the FERC eliminated gas costs from minimum bills in pipeline tariffs (Order 380), reducing the exposure of local distribution companies to take or pay obligations and shifting the burden entirely to the

pipelines. These developments provided further incentives for pipelines to breach their contracts with producers.

In 1985, the FERC recognized that it needed to implement a more affirmative policy to resolve the contractual crisis in the industry and to cope with the inefficiencies caused by regulated pipeline prices that greatly exceeded the price of spot gas in the field and that distorted gas production decisions. The FERC used the crisis to "encourage" the gas pipeline industry permanently to change the way it does business. Specifically, the FERC began to pursue a long-term policy of requiring pipelines to provide open nondiscriminatory unbundled transportation service for gas purchased in the field by distributor and end-use customers in competition with one another and with pipelines (Order 436 and Order 500). While providing transportation to all on a nondiscriminatory basis is technically voluntary, the FERC provided a substantial incentive to participate by discouraging contract carriage certificates that are not tied to open access rules and by trying to tie the resolution of the rate-making treatment of pipeline take or pay liabilities to participation in the general open access regulations.

Because pipelines needed to find alternative ways of marketing gas, and because the FERC channeled these needs to create a common carrier gas transportation system, virtually all major interstate pipelines now provide unbundled transportation service. The proportion of the gas transported by pipelines that is owned by third parties purchasing unbundled transportation service has grown enormously and by 1990 accounted for roughly 70 percent of the gas moved by interstate pipelines (see figs. 6.17 and 6.18). By purchas-

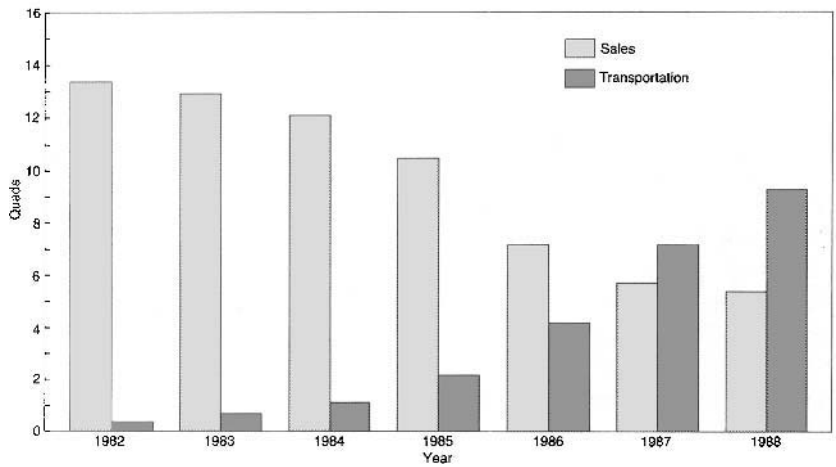

Fig. 6.17 Transportation to market vs. system sales
Source: "Carriage Through 1988," INGAA, Issue Analysis 89-2, May 1989.

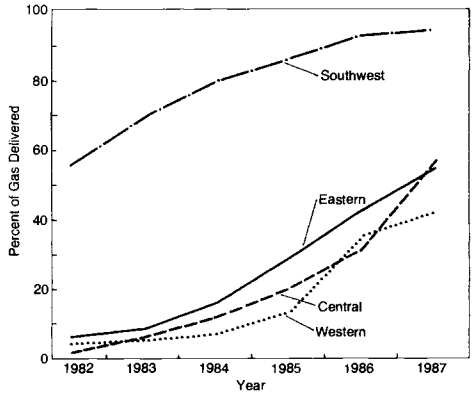

Fig. 6.18 Percentage of gas delivered by twenty major interstate pipeline companies to LDCs and end users in transportation programs, by major market area, 1982–87
Source: U.S. Department of Energy (1989, 45).

ing gas directly from producers or through gas brokers, local gas distributors and large customers have kept their gas costs lower than if they had to buy exclusively from pipelines based on standard tariffs. Most contractual disputes between gas producers and gas pipelines have been resolved (just as oil prices rose significantly again!), and the demand for gas, especially to generate electricity, is increasing. In 1990, the field price of over 90 percent of the gas produced in the United States was either unregulated or below regulated ceiling prices. Amendments to the NGPA passed in 1989 remove all remaining field price regulations in 1993.

Not all the regulatory problems that plague the natural gas industry have been solved (Teece 1990). The FERC has created a regulatory environment in which pipelines have an ambiguous obligation to provide both transportation service and bundled gas service. The appropriate rates and contractual obligations to place on buyers consistent with these pipeline obligations have still not been fully resolved. Furthermore, enthusiasm for unbundled transportation services must in part reflect the abundant supply of low-priced spot gas that was available after 1985. As supplies tighten, spot prices are likely to rise and to become more volatile. Those who choose to rely too much on spot purchases may someday learn to regret it (Teece 1990)—and will probably seek new field price regulations actively. Nevertheless, the primary cause of the natural gas mess, field price regulation, is now almost gone. Let us hope that we do not try it again.

6.7 The Causes of Reform

The preceding review should leave the reader convinced that no simple explanation accounts for the reforms in economic regulation that took place after 1975. Nonetheless, some general forces appear to be at work.

The prior wave of regulatory reform occurred in the 1930s, a period of great economic turmoil. Whereas the 1970s and 1980s were hardly as tumultuous as the 1930s, in comparison with the first twenty-five years after World War II they were certainly no picnic either. The economy generally performed poorly during most of the past two decades, and this gave added salience to proposals that could improve efficiency by a politically visible amount. In the immortal words of Everett Dirksen, "a billion dollars here and a billion dollars there, pretty soon you are talking real money."

Nonetheless, economic hardship alone would not have been sufficient had regulation been working reasonably well. Here the academic scholars deserve a role in the story. The numerous studies of economic regulatory policies, along with the cynical interpretation of them that emerged as the economist's political theory of regulation, could hardly have escaped official Washington. The real message of this work was that the market failure rationale for economic regulation had been vastly oversold across the board. In no case could one categorically state that the natural monopoly clearly encompassed all facets of a regulated industry. And one could readily show that attempts to regulate markets having little or no natural monopoly characteristics were costly.

But, we might ask, so what? Why did protected erstwhile competitors fail to defend their turf? Is interest group theory dead? Obviously not—the savings and loan debacle is testimony to the proposition that the special interest view of regulation is not devoid of merit. And, if we look more deeply, in no case did regulatory reform occur with *no* significant organized support. The railroads had wanted to be less regulated since the 1950s. They were successfully opposed by competing modes until the industry essentially went belly up. Because railroads really are an extremely efficient and important means of transporting many types of goods, it would have been cosmically foolish to let them disappear. So the truckers lost—and, while Congress was at work, it deregulated the truckers as well.

In telecommunications, AT&T can blind us by its predivestiture size. Surely, AT&T did not want either divestiture or deregulation. But, since the invention of the telephone in 1876, AT&T has not been the only significant player in telecommunications, and its structure has always been controversial. Even so, technology probably forced the issue. Hughes Aircraft, not AT&T, invented the geosynchronous satellite; immediately thereafter, AT&T was frozen out of satellite communications for more than a decade. Numerous players in the electronics industry (radio, computers, semiconductors) also produced technologies that made use of communications—and they sought part of the action. Technology proceeded to make transmission costs in telecommunications so

low that large-scale users sacrificed very little in unit costs by abandoning the scale economies of the public network and going it alone. MCI, of course, was a peanut company, an unlikely candidate to overcome AT&T. But much groundwork had already been laid by much larger companies in bringing about Above 890 and "open skies" in satellites.

Airlines pose a difficult case. Until the very end, when the die was cast, no major carrier wanted deregulation, nor did any other organized interest. Aircraft manufacturers have been a major beneficiary of deregulation, but they played no role in the deregulation debate. Here the most plausible explanation is political entrepreneurship by Senator Kennedy and then-president Carter. We find no plausible interest group account of their advocacy of deregulation or of Carter's great care in seeking out CAB appointees who would carry out the deed. In choosing between political entrepreneurship and the force of economic ideas, we simply cannot bring ourselves to choose the latter because ideas did not work elsewhere in the same period.

The general economic troubles of the 1970s were especially centered in the energy sector. Here the case that regulatory reform might actually address the economic problems associated with stagflation—the part associated with wildly fluctuating energy prices—was not the stretch that it was in the other regulated industries. In the late 1970s, Congress and the president believed that their political futures were at stake in doing something about energy. Gradual natural gas deregulation was surely a plausible move—deregulation because the economic disruption of the oil crisis had been exacerbated by the regulation-induced gas shortage, gradual because politicians naturally sought to avoid cataclysmic disruptions, even if gradualism is itself costly. Note that, a decade later, gradualism was also pursued in rationalizing telephone pricing.

In sum, our account is forced to give some role to almost all the theories discussed in section 6.1. Economics research seems to have played a role in most, but not all (i.e., telecommunications), of the reforms that we have reviewed. In most cases, some organized interests favored reform, but there are exceptions here as well (airlines and trucks). More important, the biggest interests rarely won. A minimal degree of organized support may be necessary, but, once the game has strong players on both sides, the winner does not usually seem to be the one that ought to have the most clout. Maybe this is when ideas matter. Indeed, while normative principles of efficiency are not sufficient for reform, they seem to have influenced the form that reform took once a policy change was at hand. Whereas the ultimate result was never the first-best solution from the economics textbooks, in every case economics had an important role in structuring the reform. Yet, in every case, the desire to avoid disruptive change and to protect some identifiable interest constrained the design of the reform in ways that reduced economic efficiency.

Certainly, the main question in the 1990s is whether these reforms are here to stay. Were it the case that they were largely the result of Reaganism, we would be skeptical of their durability, for Reaganism did not really survive

even into Ronald Reagan's second term. But relaxation of economic regulation was not a Reagan reform, although parts of it were surely broadly in step with Reagan ideology and the Reagan administration aggressively pursued the regulatory liberalization reforms that began in the late 1970s. If anything, however, the Reagan administration *reduced* the chance that these reforms would endure: by refusing to let FAA programs expand in pace with airline growth after deregulation, by permitting several anticompetitive airline mergers, by failing to stop the banking debacle when the cost was still in the tens of billions, by allowing federal devolution to have priority over regulatory reform and so to be too deferential to states that seek to increase regulation (insurance, telecommunications), and by generally ignoring economic regulatory issues in the second term. The cost is likely to be increased regulation of an undesirable form in banking (rather than more rigorous financial scrutiny) and perhaps even a return to airline regulation. Nonetheless, most of the changes since 1975 seem to have proceeded too far and created too many interests to protect them to make reversal plausible. For the most part, these policy changes did improve the performance of regulated industries and did make consumers better off in ways that are clearly visible. In this sense, the "ideas" account again has some force. Relaxation of economic regulation *was* a good idea, and in most cases it has worked reasonably well.

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2. *William A. Niskanen*

One of the four "key elements" of Reagan's program of economic recovery was "a far-reaching program of regulatory relief." Despite that initial commitment, the Reagan administration made few proposals for new deregulatory legislation, and it did not manage the deregulation that had been previously approved especially well. My remarks today summarize the reasons for this outcome and, consistent with the structure of this conference, focus on the traditional subjects of economic regulation—leaving others to address the interesting issues involving the regulation of financial institutions; health, safety, and the environment; antitrust; and trade.[1]

Policies and People

The initial and continuing focus of the Reagan regulatory program was relief, not reform. In his December 1980 "economic Dunkirk" memo, David Stockman summarized the rationale for this approach: "A dramatic, substantial *recession* of the regulatory burden is needed for the short term cash flow it will provide to business firms and [for] the long term signal that it will provide to corporate investment planners. A major 'regulatory ventilation' will do as much to boost business confidence as tax or fiscal measures."[2] Most of this regulatory relief was to be accomplished by administrative rulings rather than by new legislation.

The new administration moved quickly to implement this approach during its first month in office. A Task Force on Regulatory Relief, chaired by Vice President George Bush, was established to provide general policy guidance. A large number of pending regulations were suspended for sixty days to permit review by the new administration, and the remaining price controls on oil and Carter's voluntary price and wage controls were terminated. The regulatory review was centralized under the Office of Information and Regulatory Affairs (OIRA), which was part of the Office of Management and Budget (OMB). The most important of these initial measures was a new executive order that instructed the executive agencies, to the extent permitted by law, to use the maximum net benefit criterion to choose among regulatory options. This executive order also established a special procedure for major regulations and authorized the OIRA to review all proposed rules prior to their publication in the *Federal Register.*

Most of the new appointees to regulatory positions had a strong commitment to deregulation. Two economists who had designed the initial regulatory agenda were soon appointed to key positions—Murray Weidenbaum as chair-

1. For obvious reasons, most of this summary is taken from Niskanen (1988, 115–54).
2. The "economic Dunkirk" memo is reproduced in Greider (1982, 137–59).

man of the Council of Economic Advisers (CEA) and James Miller as head of the OIRA. The most important other initial appointments included William Baxter as assistant attorney general for antitrust and Mark Fowler as chairman of the Federal Communications Commission (FCC). Many of the subsequent appointments also reaffirmed this commitment. I and Tom Moore each served four years as the microeconomic member of the CEA. Miller's successors as head of the OIRA were Chris DeMuth, Douglas Ginsburg, and Wendy Gramm. Miller later served as chairman of the Federal Trade Commission and Ginsburg as assistant attorney general for antitrust. The later appointment of Heather Gradison as chairman of the Interstate Commerce Commission proved important to forestall pressures to reregulate railroads and trucking. For the most part, the disappointing regulatory record of the Reagan administration cannot be blamed on a lack of skills or commitment on the part of those with the most direct responsibility.

The Record of Economic Regulation

A brief review of major developments in economic regulation illustrates the patterns of the Reagan record.

Agriculture

Two early reviews of agricultural marketing orders were aborted without substantial change. In 1979, a consumer group had innocently asked the Department of Agriculture to review the federal milk marketing orders. In April 1981, however, the department denied this request on the basis of estimates that a more efficient distribution of milk production would increase the federal budget costs of supporting milk prices. A major review of the broader set of marketing orders led to a preliminary 1982 decision to eliminate the restrictions on entry and to increase substantially the limits on the rules of fresh products. A storm of protest from California citrus growers, however, led the administration to modify the final 1983 guidelines, which phased out the entry restrictions on two small crops and only slightly increased the sales limits on the major crops. Congress locked up this decision by one of the first of many new "muzzling laws" that prohibited any further expenditure of funds to study this issue.

Communications

The major changes in the regulation of communications were the result of forceful early initiatives by two individuals, Mark Fowler and Bill Baxter. In 1981, the FCC deregulated most radio broadcasting restrictions, implemented a simplified system for renewing radio licenses, and induced Congress to extend the license period for both radio and television stations and to authorize a lottery system for the award of new licenses. The later record, however, was mixed. A 1983 initiative to relax the "financial interest and syndication rules,"

which restrict the right of television networks to develop original programming and to syndicate reruns, was stopped by "the California mafia" in the White House responding to pressures from Hollywood. In 1984, Congress approved the full deregulation of cable rates but did not approve any new entry into the monopoly cable markets. After the sharp subsequent increase in cable rates, Congress may soon compound this error by reregulating cable rates, again without permitting new entry. And the major missed opportunity was the failure to change the system for allocating the electronic frequency spectrum, a system that corresponds roughly to the way the Soviets run their economy. As a consequence, some new technologies have been delayed even though large parts of the spectrum are underutilized.

The major change in communications regulation was the result of Baxter's January 1982 resolution of the long-standing antitrust case against AT&T. Under the threat of a court decision imposing a divestiture plan, Baxter and AT&T worked out a plan, effective in 1984, that allowed AT&T to maintain its long-distance services, its unregulated communications services, and its manufacturing company but required it to divest its twenty-two local operating companies. As expected, this decision led to a substantial reduction in long-distance rates and a substantial increase in the (state-regulated) local rates. This decision was not broadly popular, and Congress considered more than a dozen bills to stop or limit the increase in subscriber charges. After a considerable amount of populist posturing, Congress forced the FCC to delay the access charge ruling but did not reverse this basic change in the structure of the telecommunications service industry.

Energy

After the important early decision to terminate the price controls on oil, the administration's later record on energy regulation was disappointing. A simple bill to deregulate the wellhead prices of natural gas was approved by the cabinet council in 1982 but was deferred by the White House as part of a general strategy of avoiding any more controversial issues prior to the election. A more complicated 1983 proposal by the Department of Energy received no support in Congress. The reaction by both the White House and Congress was based on a broadly shared but incorrect expectation that decontrol of natural gas would have increased retail gas prices.[3] In the end, the Federal Energy Regulatory Commission effectively decontrolled gas prices by setting price caps that, until this summer, were above market prices. And, in 1988, Congress quietly terminated the Fuel Use Act, which had restricted the use of oil and natural gas in new power plants. The administration also equivocated on other energy issues. For example, the required corporate average fuel economy on new cars was administratively reduced by one mile per gallon, but the administration

3. For my own analysis of the effects of controls on the wellhead prices of natural gas, see Niskanen (1986).

would not propose the termination of this absurd law; Congress is now considering a large proportionate increase in the required fuel economy—a measure that, not incidentally, would be biased against Japanese cars.

Labor

The Department of Labor made several administrative changes in the regulations affecting work under federal construction contracts and on work at home but would not propose a change in the laws authorizing these regulations. The only major legislative proposal was to authorize a lower minimum wage for teenage summer employment, a proposal that was strongly rejected by Congress.

Transportation

The Reagan administration and Congress made only small changes to extend or complement the major transportation deregulation measures instituted during the Carter administration. In 1982, the administration concluded an agreement with the major European nations to permit greater flexibility in the fares on transatlantic flights. Also in 1982, Congress approved the full deregulation of intercity bus travel—a measure that provoked little controversy because there never was a basis for regulating that industry and the demand for bus service had slowly declined in response to rising income and airline deregulation. And, in 1984, Congress approved the Shipping Act to enable ocean shipping companies to offer lower rates and better services than permitted by the shipping conferences. The administration's proposal to terminate the Interstate Commerce Commission on its centennial in 1987, however, fell on deaf ears, and the ICC still maintains considerable authority that could be used to reregulate trucking and the railroads.

The major missed opportunity was the failure to reform, expand, or privatize the airports and airways systems in response to the large increase in commercial flights induced by airline deregulation. For example, the number of air traffic controllers is now about the same as before the 1981 strike, and the system for allocating landing slots at congested airports has yet to be rationalized as no new major airport has been built for fifteen years. In late 1985, after several years of pressure from the OIRA and the CEA, the Department of Transportation approved the resale of landing slots at the four most crowded airports, but this action was later challenged by Congress. In 1988, the department even overruled an increase in landing fees on light aircraft using Logan Airport. And the administration showed no interest in several proposals to subcontract or privatize parts of the airports and airways systems. The failure to follow airline deregulation with complementary changes in the airports and airways system is the primary reason for the increased airport congestion and airline delays and the background rumbles, primarily from business travelers, for some reregulation.

Patterns and Lessons

The major pattern of the Reagan record on economic regulation was the attempt to rely primarily on administrative deregulation and the reluctance to propose changes in legislation that would extend or lock in prior deregulation. The primary reason for this pattern is that regulatory relief was clearly the lowest priority of the four key elements of the Reagan economic program. This should not be surprising. The other key elements were more ambitious and promised clearer benefits. Deregulation usually leads to diffused benefits and concentrated costs. Some types of deregulation were checked by campaign commitments that Reagan had made to the construction, trucking, and maritime unions and by business interests, especially in California, to which the administration was responsive.

The major lesson from this record is that the potential for administrative deregulation is quite limited. The able people who led the OIRA probably pushed the White House regulatory review process as much as possible, given the limited change in regulatory legislation. Their aggressive actions to review, modify, or delay regulatory proposals initiated by the executive agencies, however, were ultimately checked by both Congress and the courts. On several occasions, Congress threatened to constrain the authority of the OIRA or to eliminate its funding, a controversy that has not yet been resolved. (For example, the position of the head of the OIRA has not been filled for over a year, and Congress is again bargaining with the administration over measures that would reduce the authority of the OIRA.) A more explicit construct was the application of a "hard look" doctrine by the federal court of appeals for the District of Columbia to proposals for both regulation and deregulation. The primary effect of this doctrine is to require a more explicit rationale, based on the criteria in the regulatory legislation, for regulatory changes of any kind. This role of the courts, a position generally endorsed by the Reagan administration, increases the importance of changing the regulatory legislation if the momentum for deregulation is to be revived.

Another lesson is that budget policy sometime got in the way of good regulatory policy. This was first apparent when David Stockman agreed to the egregious sugar program in exchange for a few votes on the fiscal year 1982 budget. Our budget accounting conventions are also a problem. Since user fees are treated as an offsetting receipt, for example, both the deposit insurance funds and the airports and airways fund showed negative net outlays for most of the Reagan years, despite a rapid increase in liabilities and investment backlogs. The objective of any budget director to limit measured budget outlays was part of the reason why the administration was slow to address both the deposit insurance disaster and the increased airline delays. The major current threat of mandated benefits of several kinds, in turn, is primarily a consequence of the perception that it is difficult to expand the welfare state through the federal

fisc. We still need a system that forces a review of the costs of proposed and recurring federal actions of all kinds.

For all these problems, the Reagan regulatory record was probably better than average. The total costs of regulation, as measured by several indirect indices, increased at a slower rate than at any time since the 1950s. For those of us who were directly involved, however, this record was very disappointing. Some mistakes and, more important, the missed opportunities failed to sustain the momentum for deregulation initiated in the 1970s and set the stage for what portends to be a regulatory explosion in the 1990s.

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3. *Elizabeth Bailey*

I agree that much of the momentum for deregulation was set in the 1970s. But I am more upbeat than Bill Niskanen because I see a lot of progress in the evolution of decontrol policies during the 1980s. The airline industry went the farthest. Its regulatory agency, the Civil Aeronautics Board (CAB), was fully dismantled in the 1980s. This was a major achievement.

Moreover, a number of effective policies for dismantling economic regulation were designed in the 1980s for trucks and rail. True, their regulatory agency, the Interstate Commerce Commission, continues to exist. But the actual fact, I think, is that most goods are now moving largely by contract and therefore largely outside the regulatory web.

For other industries, like electric utilities, gas pipelines, and telecommunications, the 1980s ushered in what economist Alfred Kahn calls a "half regulated, half free" system. Yet, even here, I see evolution. I see some coherent direction in the design of decontrol policy.

While I agree with Paul Joskow and Roger Noll that policy implementation across industries has been imperfect and sometimes reflects political (rather than economic) influence, nevertheless I see more of a unifying policy theme than they do. Moreover, the theme relates very much to economic ideas. De-

control policies of the 1980s have been influenced by the ideas, not of defunct economists, but of economists who are living today and who have participated as deregulators and as witnesses before Congress and the courts.

Public intervention is still undertaken. But, now, the preference is to seek policies that move in the direction of the market economy, of competition. Policies are designed to promote actual and potential competition instead of to preclude it by preventing entry. The focus is now on figuring out in a much more systematic way how markets can be successful.

Alfred Kahn recently expressed a similar view about the evolution of regulatory policy. He says that evolution "is the path not of a full circle or pendulum which would take us back to where we started," as was discussed by Charls Walker this morning with tax policy. Instead, the path is that "of a spiral, which has a direction. That direction is an expression of a preference for seeking consistently to move in the direction of the first-best functioning of a market economy, rather than the second- or third-best world of centralized command and control" (Kahn 1990, 353–54).

Let me go back in history a little bit and outline how this shift of people's attitudes from detailed regulation to a preference for market freedom took place. When economic regulation was first designed in the late nineteenth century, both transportation and communications were inconvenient and costly. So it made economic sense to encourage industry-wide natural monopolies and oligopolies to promote efficiency in supply.

I think the government had other motivations as well. Economic development was considered extremely important, and there was a criterion of equity. Service was needed to all parts of the United States at a reasonable cost as we underwent western expansion. Over time, however, economic development goals were largely satisfied. Services were universally available and at reasonable prices. There was also technological change that was lowering cost and bringing new modes of transportation and communications into being. Increasingly, rules that were designed for railroads were extended inappropriately to more competitive modes, like air and truck. The government started to maintain equity, not just for rural consumers, but between modes of transportation and between different carriers and players within industries. Regulations became even more cumbersome, and scholars began to discover and to highlight regulatory failures as being worse than the market failures that regulation was meant to address. Hearings in aviation in the early 1970s were the most dramatic example of bringing these regulatory failures to public attention (see Breyer 1982).

The Kennedy hearings dramatized the fact that the CAB was holding air fares at a high level that prevented many ordinary citizens from using them. Citizens were offered much lower prices in states, such as California and Texas, that had decontrolled interstate prices. It was demonstrated that the market worked much better for consumers than did regulation.

So the attitude that favored regulation began to change. The imperfections

of competition were deemed to be preferable to the imperfections of regulation. The new decontrol policy has been codified in a modern, more refined version of workable competition, known as contestability theory or contestability-enhancing principles (see Baumol, Panzer, and Willig 1982; and Bailey 1991).[1] These principles dictate removing regulatory and antitrust barriers that prevent the access of competition or that prevent competitive pricing or contracting. They include making an effort to free markets that can be competitive. Similarly, they include examining markets to see whether potential competition is workable before actual share of market is taken to be a sign of monopoly power.

Even when sunk costs are significant, traditional rate and entry regulation may not be necessary: where possible, government should intervene to ensure equal access to the sunk facility. If the facility is privately owned, government should require equal access by all users at equal prices. If the facility is owned by a public authority, then that authority should have open access among its users. If it is not possible to ensure equal access, sunk investments should be isolated. That portion of the industry should continue to be regulated. Even here, however, a form of regulation should be adopted that permits as much freedom of contracting and other operating flexibility as possible.

These prescriptions are displayed to a remarkable degree in the U.S. decontrol movement of the 1970s and early 1980s. They provide a unifying theme for otherwise quite diverse industry situations.

In aviation, open entry into city-pair routes was seen as providing multiple competing airlines in most traffic markets. The threat of potential competitors was thought to offer an acceptable constraint on monopoly pricing in thin traffic markets. Thus, the Airline Deregulation Act of 1978 opened entry fully in all markets. One year later, full upward pricing freedom was to be conferred. The industry thought to be the most contestable was thus the most fully deregulated.

In railroads, the 1976 Railroad Revitalization and Regulatory Reform Act (the 4R Act) offered price freedom when shippers had competitive alternatives from competing railroads or more broadly from trucks and barges. Regulation was continued in situations, such as coal transport, where a particular railroad holds a position of market dominance. So that was a very appropriate way, from the contestability stance, of sorting out what needed to be done in that industry.

In telecommunications, technological change meant that competition was now possible in long-distance services. Contestability theory would say that these markets should be deregulated. The Department of Justice (DOJ) reasoned that, for this deregulation to succeed, it was necessary to divest AT&T of its local exchange services. Then AT&T would be unable to use its geo-

1. The philosophy that competition is the preferred policy as long as the free market can achieve a level of performance at least as high as can be enjoyed under government regulation or ownership dates its origins to Clark (1940).

graphical control at the local exchange level to thwart competition in long-distance markets. The divested local exchange companies were deemed not to be competitive given today's technology. So price regulation was continued for local exchange services. Equipment manufacturing is competitive structurally and therefore was opened for the most part to competitive forces. So the broad framework of divestiture was consistent with the theory.

In gas transport, the Federal Energy Regulatory Commission (FERC) opened competition by changing the rules of supply. Now distributors and end-use customers can purchase gas directly in the field in competition with one another and with pipelines. Pipelines are constrained to transport this gas at nondiscriminatory rates. So the logic of decontrol is evident here as well.

In the electric utility industry, beginning efforts are being made to recognize that the generation layer of the industry has the potential for competitiveness. Thus, there has been some deregulation of wholesale bulk power sales. The distribution function, where sunk costs are still substantial, continues to be regulated.

Therefore, despite the variety of different interest groups, from legislators to bureaucrats to academicians to executives, who were involved in policy setting for these industries in 1970s and 1980s, I believe that there was implicit consensus on the central ideas that guided the control movement.

It is as though the same energies were tapped into by the various protagonists in this period. The shared flow of thought had coalesced during the preceding decades of regulatory oversight. The switch from the focus on market failure was necessitated by the dynamics of competitors trying to gain access to markets. Economists, regulators, and antitrust administrators became used to dialogues in which parties actively spent more and more of their time not thinking about natural monopoly but instead thinking about why entry should be permitted in markets that previously had been shielded from entry. A new entrant desiring to participate in long-distance telecommunications services would force one expert witness into developing the idea that such services were no longer natural monopolies. A responding witness would develop a test to show that a low price response to competitive entry was acceptable since it did not place an unwarranted burden on the consumers of the firm's monopoly services.

And so was forged, by a process of conflict, a framework of consensus.

The transition to the freer environment has been dynamic and turbulent. Certain groups have gained, such as customers in dense markets. Other groups have both gained and lost, such as customers in thin markets where service has improved but price has risen. Other groups have lost, such as organized labor, whose pay is declining to competitive levels. So there has been controversy. There has also been further evolution in decontrol policy as some of the performance results have been analyzed and understood. Some degree of experimentation continues to take place.

The railroad industry has experimented with price caps and stand-alone cost

concepts in dealing with continued regulation of captive markets, such as coal transport to public utilities. These ideas have been most efficacious for they offer the protection of regulation in setting overall price ceilings while encouraging freedom of contracting. Most of the coal movements now operate not under the regulatory tariffs but instead under very sophisticated contracts that set a number of conditions on investment and performance as well as price. These ideas could beneficially be spread to other deregulatory settings, especially telecommunications and gas pipelines.

In telecommunications, decontrol policy could be made much more bold. Because of the price distortions of state regulation, the prices of long-distance services have been held way above costs in order that prices of local, particularly rural, services can be low. This structure has encouraged massive entry and investment in duplicative switches and fiber optic cable during the decontrol period. While costly, there is the benefit that full deregulation of long-distance services could now be justified, and this may happen soon. So, even though AT&T still has a very big market share, several other firms now have the potential to serve the entire market. Similarly, total deregulation of telephone equipment is warranted, including lifting the restriction that prevents local operating companies from entering this business.

In airlines, it is now recognized that the industry is imperfectly contestable. Fortress hubs and computer reservations systems have sunk cost characteristics. Hubs, involving a whole system of routes that need simultaneously to be offered, constitute an entry barrier and hence afford geographic rents to carriers. In addition, few carriers now have the resources to construct and deploy computer reservations systems. Competition is working reasonably well, but there is a balance between quite low prices in competitive city-pair markets and higher prices on monopoly routes and at concentrated airports. The DOJ realizes that both hubs and reservations systems have brought service benefits to consumers even as they have reinforced the oligopolistic characteristics of the industry. Rather than reregulate, however, DOJ intervention is being undertaken on a case-by-case basis to keep the degree of these rents reasonable. Other important issues in aviation are the need to find airport polices that address airport congestion issues now and for the future and the need for policies that preserve an adequate number of competitors in the industry.

Perhaps the industry most in need of systematic application of contestability-enhancing decontrol policies is the electric utility industry. Just as railroad rates of return were set too low by regulators in past decades, so today state regulators are allowing electric utilities rates that are insufficient to finance new plant construction, both in terms of transmission facilities and generation. Moreover, in both electric and gas utilities, partial deregulation has introduced price distortions that encourage uneconomic bypass. For example, private firms are finding it cheaper to construct billions of dollars of direct pipelines rather than pay the high cross-subsidy prices set for common carrier services.

To conclude, I will say that I am confident that deregulation is the right policy for the long run, but I know that it continues to present difficulties today. However, I do not believe that we are going to backslide, as Bill Niskanen is concerned. Full economic regulation just does not make sense at a time when the pressures for market economies are manifesting themselves throughout the world. Indeed, I think that the momentum from U.S. decontrol policies is responsible in no small measure for the move toward privatization and market economies in other countries. So the United States must continue to evolve policies that spiral in the direction of economic freedom, adopting a philosophy of minimalistic interventions.

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Summary of Discussion

Paul Joskow believed that people may underrate the actions of the Reagan administration regarding economic regulation. Joskow thought that this is partly because the administration had a very tough act to follow. In the late 1970s, there was both administrative deregulation and significant statutory changes, while there were fewer statutory changes in the 1980s.

Joskow argued, however, that the administration had prevented the regulatory situation from worsening in the 1980s, which had been a real threat. The Interstate Commerce Commission (ICC), for example, went beyond what the Carter administration had been willing to do. This was especially true in the case of railroads, where the ICC interpreted the law in such a way as to prevent the captive shippers from capturing the regulatory process again. Joskow wished that there had been a sunset provision for the ICC, like that for the Civil Aeronautics Board, but going through Congress to obtain that provision might have had greater costs than benefits.

The appointment of Mark Fowler to the Federal Communications Commis-

sion was also a good decision, according to Joskow. Fowler dealt very effectively with congressional concerns about changes in the telecommunications system after 1984, and, despite criticism, he maintained the system of adding access charges to local telephone bills.

Finally, with regard to natural gas, no one wanted to raise the issue of natural gas policy in the early 1980s, given what had happened in 1978. By 1983, it was probably not worth spending a lot of political capital in order to revise regulations that were scheduled to expire in 1985 anyway. By 1986, when the oil and gas markets collapsed, the regulations were no longer binding. Overall, Joskow felt that a fair appraisal of economic regulatory policy in the 1980s is between a B+ and an A−.

Robert Litan argued that there is tremendous latent demand on the part of the public for reregulation of prices whenever the price of a particular commodity begins to soar. Examples at the state level include attempts to regulate the prices of insurance and cable television. At the federal level, the move for reregulation of airlines is partly due to the high prices in St. Louis and Minneapolis and also partly due to a concern for safety and a widespread feeling that deregulation caused the whole mess. It is interesting, Litan added, that this demand for reregulation has not applied to oil prices. One reason may be that the Reagan administration dismantled oil price controls right at the beginning—the United States has not had controls on oil prices for ten years. The other reason is that most people remember the long lines in 1973–74 and associate them with the price controls. This may be one case in which latent demand for reregulation will not arise precisely because people draw the connection between price regulation and its adverse effects.

David Stockman asserted that the Reagan administration believed that economic regulation was wrong as a matter of first principles. He said that, if one looked at the economy in 1979, perhaps $400–$500 billion of GNP was regulated: oil, gas, trucking, railroads, even airlines were just coming out of regulation. Now all that regulation is gone, and there is very little likelihood that the political system could build it back up again—there are too many players who benefit from an open market. Thus, Stockman believed that the battle of first principles had been won and further, had diffused throughout the entire world. Deregulation was not only a domestic success but also a global victory that will have huge consequences for a long time to come.